

COAL AGE

Vol. 12

NEW YORK, JULY 7, 1917

No. 1

The Music of Business

IS there any music in your business, Mr. Mine Manager? It is quite possible to have music in business, even that of coal mining.

A coal-mine manager—an experienced but extraordinarily human sort of manager—recently showed me the musicians and allowed me to hear some of the harmony they created in his business.

He took me with him on an inspection trip around his mines. I knew that outside of business hours he was a lover of music, but I did not know until that day that so much harmony could be got out of mining.

THE first mine we visited had a crew of negro tipplemen. There had been a flag-raising the day before, with appropriate speeches and songs and the band playing patriotic airs. The day's run was well under way and the coal was coming over the tipple in a steady stream, everything moving like clockwork. It would have done the President's heart good to see that tipple crew in action.

But it wasn't the way the work was being performed that attracted my attention, and nailed it down. Every man in that crew was singing—and you know the negro is no slouch when it comes to harmony, melody, time, tune, timbre. A fellow with a strong, lusty voice sang the verses of "Dixie" with occasional interpolations of his own such as "Cinnamon seed and sandy bottom—if it's men yo' wants, we sho' has got 'em," while the whole crew joined in the never-to-die chorus of "Look away, look away, look away Dixie land."

The manager smiled broadly as he turned to me and remarked, "How is that for music in business?" Then he added: "You know, when this tipple crew sings like that I don't need to knock on wood. I know there is going

to be a good day's run. But I'll show you a different kind of music at the next place we stop," he added, as we started away.

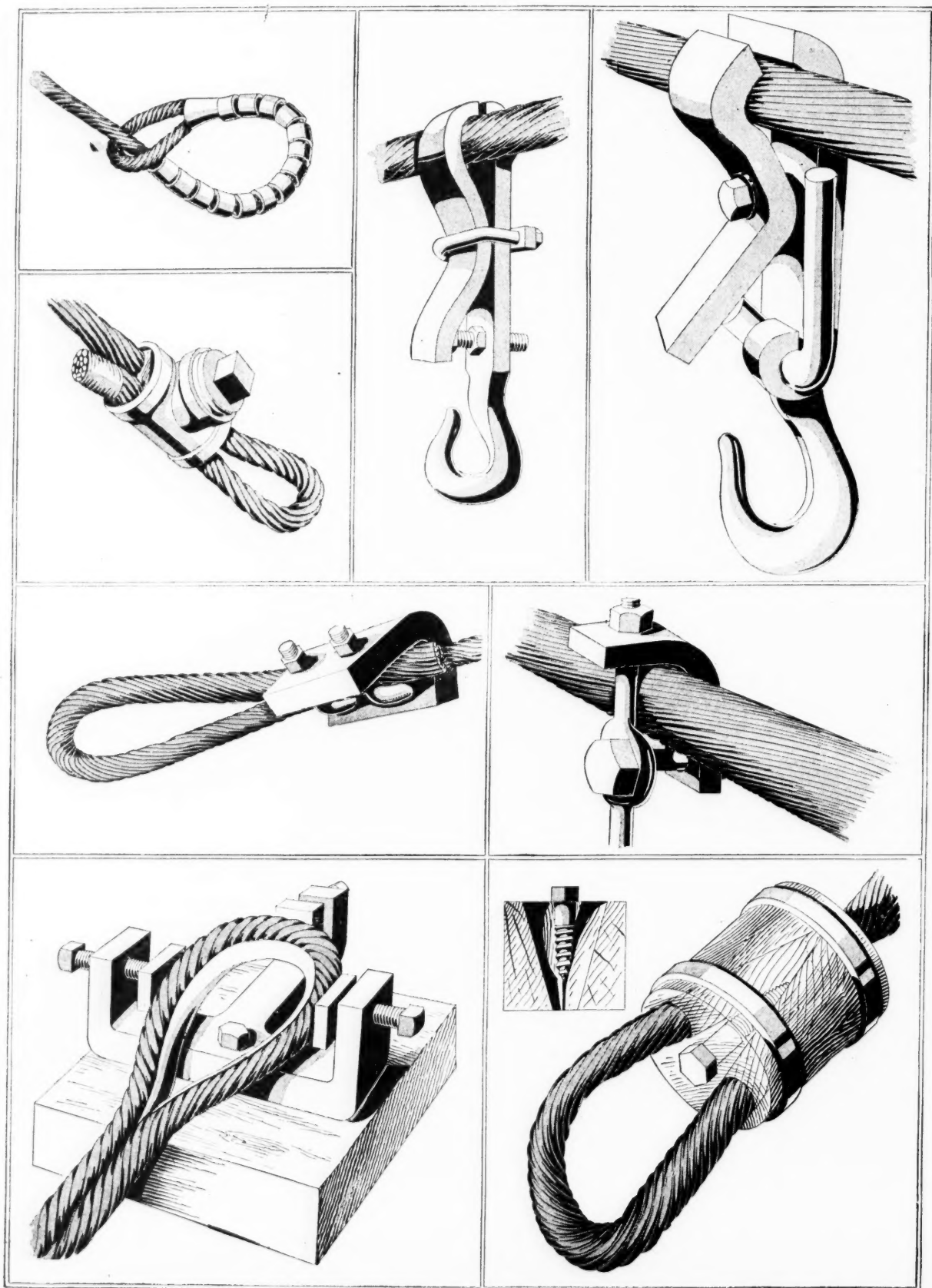
OUR next stop was at the community gardens, and the music to which the manager referred was the music of things growing. It was Saturday afternoon, and we were greeted by a large crowd of boys and girls. They showed the manager samples of their garden products, raised from seed he had given them free, to plant in gardens plowed without cost. In an extremely short time prizes had been awarded. A ten dollar gold piece was given to an Italian boy who looked hardly big enough to handle a hoe. Two little girls got a five dollar gold piece, and a number of crisp one dollar bills were handed to the other winners. Then the whole crowd gathered round the flag pole and sang the "Star Spangled Banner."

THROUGHOUT the balance of our trip there were other and frequent outward manifestations of harmony in the organization and complete understanding existing between bosses and men and the wives and children of the miners. When I asked my manager friend how he kept that spirit so much in evidence he replied simply, "Oh, I don't know, I just do all I can for the other fellow; he seems to like that kind of thing."

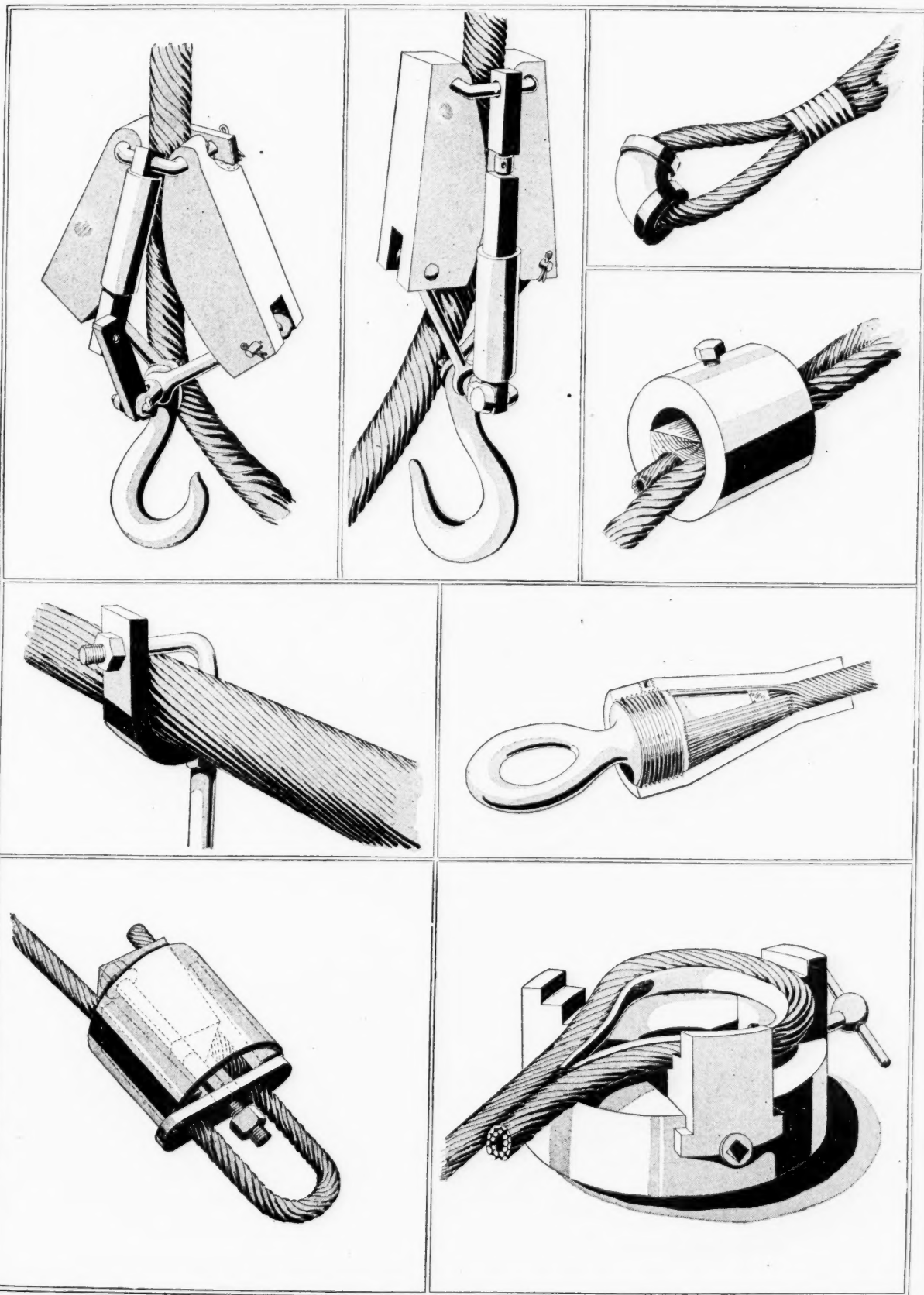
Has he not answered your doubts concerning the possibility of the existence of music in business, even that of digging coal?

There is music in business as certainly as there is music in every bird throat, and spontaneous song is the outward manifestation of inner contentment. The best music we can have at the present time is that of patriotic business and contented workmen—and the coal industry can contribute its full share to the national harmony.

Ideas and Suggestions



Cable Fastenings



Recent Briquet-Plant Installations

BY G. J. MASHEK
New York City

SYNOPSIS—*The utilization of the fine coal produced at the mine and in transit has long been retarded in this country by the low price of high-grade coal. Successful briquetting depends upon successful binding. A mixture of sulphite pitch and oil residuum, together with proper handling of the constituents both before and after pressing, has resulted in excellent briquets.*

IN THE preparation of coal at the mines, and in its transportation and handling at the different distributing points, a considerable quantity is broken down to small fragments and dust. This product is usually all included under the name of culm, or slack, and is of low market value, quite often being considered a total loss.

As has been stated in the columns of *Coal Age* a number of times in the past, the briquetting of this refuse, and also of other fuels, such as lignite, is an old and established industry in Europe, where, because

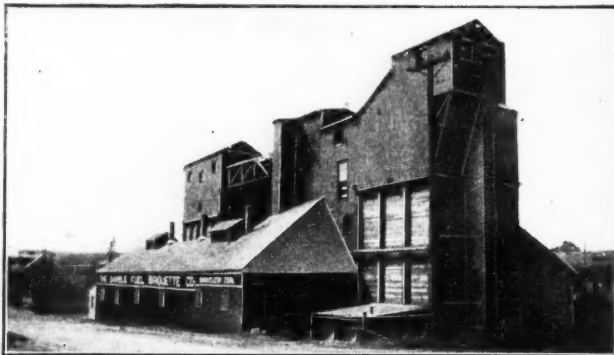


FIG. 1. HARRISBURG BRIQUETTING PLANT

fuel is scarce and high priced, attention is paid to the recovery and saving of every particle of coal. This has not been the condition in North America, owing to the fact that there is a plentiful supply of good natural coal and because of the improved methods of working the mines. Consequently, the best quality of coal it was possible to produce was considered a cheap commodity, and only in isolated cases was attention paid to the recovery and utilization of the broken product.

There are many instances where as much as 40 per cent. of the total amount of coal mined remains on the mine dump in the form of culm produced during the preparation of the domestic and steam sizes. In the anthracite region of Pennsylvania a large portion of the mine product known as steam sizes is marketed below the cost of production because these sizes cannot be sold and used in their present condition for domestic and many industrial purposes on account of the competition of bituminous coal.

The processes and methods of briquetting fuels in Europe are well known, but the product produced by European machinery is not suitable for the American market, principally because of the high cost of plant

equipment and inferiority of the product, which cannot compete with the high-grade coals obtainable at a reasonable price here. Quite a number of plant equipments have been imported into the United States on which considerable capital has been expended, but all turned out to be financial failures and are not now in operation. The result has been that new processes, machinery, binders and methods for briquetting American coals have had to be gradually invented, developed and perfected so as to produce at comparatively low cost a product that could compete with high-grade natural coal.

Of considerable delay to the development of fuel briquetting in the United States, especially of anthracite, has been the question of the binder to hold the product together in the briquetted form. In Europe practically all the factories are using coal-tar pitch as a binder. The briquetting of fuels in this country started with this same material, but serious objections were raised to it by the consumers, so that as long as this material appeared to be the only available binder little progress was made. In recent years, however, a great improvement has been made in the quality of the coal-tar pitch, so that now this material can be obtained containing as low as 5 per cent. of free carbon and only a small creosote content. There are locations some distance from the better mines where, with a coal-tar pitch binder, the briquetting of the local inferior coals might be made successful. The product would fill all requirements; in fact, it would be better fuel than the coal from which it was made, and owing to the high price of high-grade natural coal, it would meet a ready market.

Today there are few plants using coal-tar pitch as a binder, and those that do make use of this material are all located in sections of the country where smokeless or high-grade fuels are practically unobtainable. Most of the other plants are now employing a special grade of oil residuum asphaltum specially made for this purpose. This is all carbon and makes a first-class binder for briquets. The binder produces little smoke in burning and no appreciable odor, but is still objectionable in the exclusively anthracite-burning sections

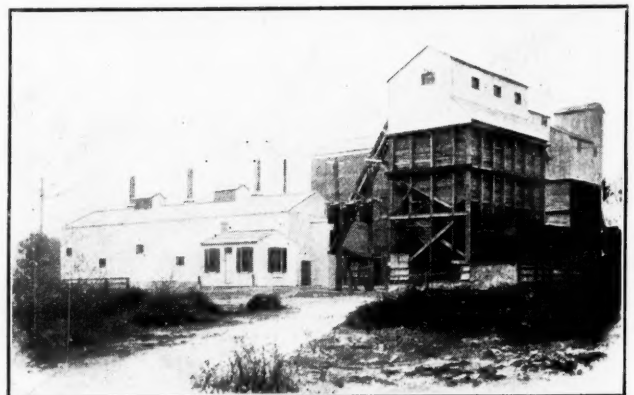


FIG. 2. BRIQUETTING PLANT OF SOUTHERN BRIQUET COAL CO., RICHMOND, VA.

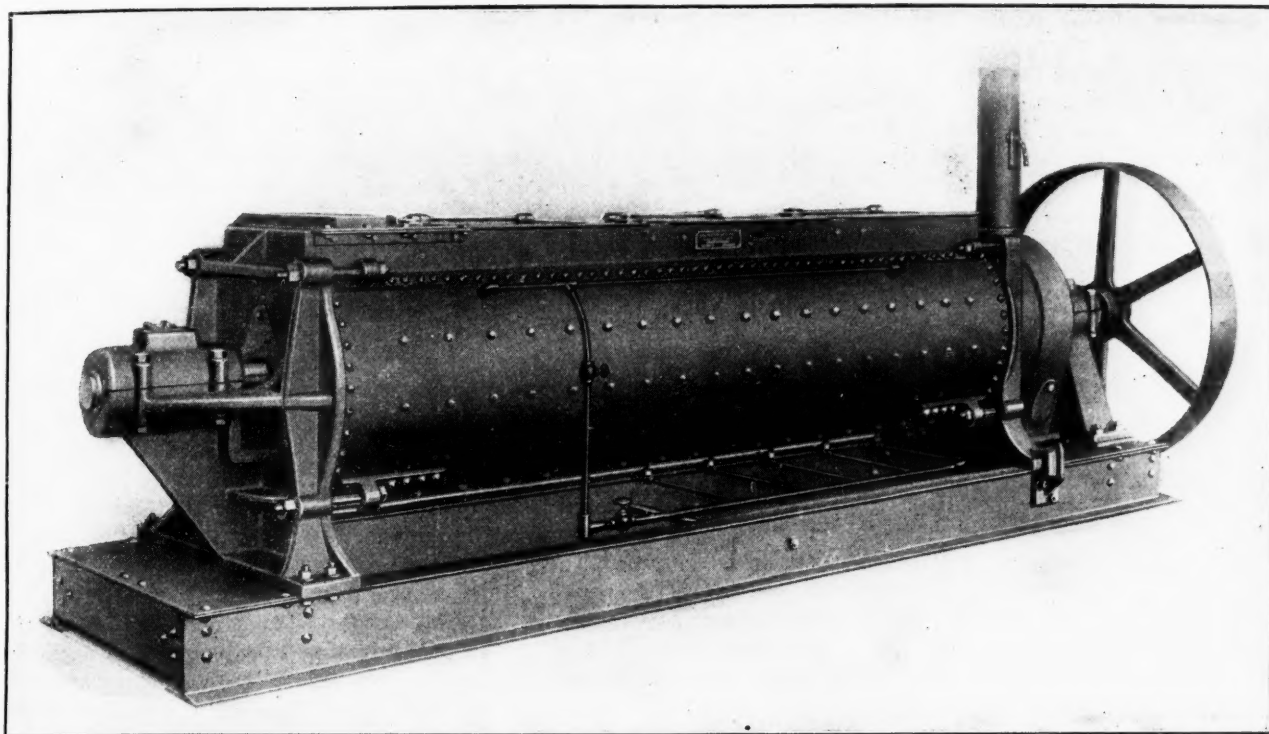


FIG. 3. THE MIXER IN WHICH THE COAL AND BINDER ARE INTERMINGLED

of the country, however, on account of the oily vapors it gives off for a few minutes after ignition. This condition is well known to practically all the coal operators who produce a smokeless natural product.

During the last 20 years many patents have been issued covering binders especially suitable for anthracite dust and coke breeze. These, it is claimed, produce a smokeless briquet. In addition to the patented for-

mulas there are a number of secret binders, several of which have been tried quite extensively and some of which produce a very satisfactory product; but no progress of any consequence was made in the use of any of these binders until 1916.

It might be stated that a binder that will produce a smokeless briquet must to a great extent be used only in connection with smokeless coal dust, such as anthracite, coke breeze or carbonized lignite, as no binder has yet been discovered by the addition of which bituminous or smoky coal can be converted into a smokeless product. However, using practically any binder, including a good quality of coal-tar pitch, the amount of smoke produced during the combustion of bituminous-coal briquets, as a rule, will be less than that produced by the natural product from the breakage of which the briquets are made.

Much of the encouragement that has been given to the building of briquetting plants during the last year and a half has been due principally to the high rates of wages demanded by the miners and the scarcity and high price of all fuels. Furthermore, with the increased demand for fuel came the usual crop of inventors with schemes that were mostly impracticable. In spite of all this, however, considerable progress was made, as there were a number of briquetting plants erected, and several are now in the course of construction.

In 1915 the Gamble Fuel Briquette Co., of Harrisburg, Penn., was incorporated for the purpose of erecting a small plant, to some extent of an experimental nature, but with the idea of testing out on a large commercial scale the feasibility of a new binder developed by Dr. B. E. Gamble, of Mt. Holly Springs, Penn. This plant, which was erected and put in operation in the early spring of 1916, used the Gamble patented binder, and briquetted hard anthracite culm that was dredged

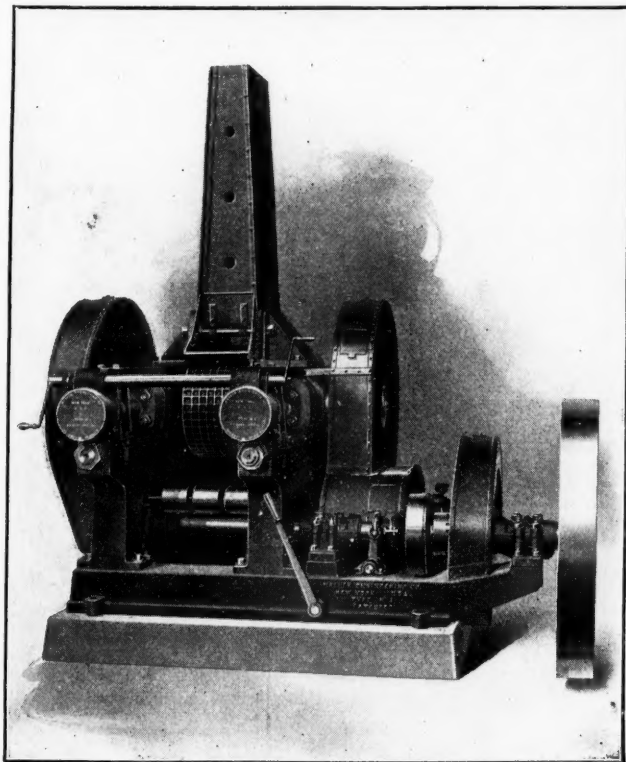


FIG. 4. A 10-TON-PER-HOUR BRIQUETTING PRESS MAKING 2-OZ. BRIQUETS

from the Susquehanna River at Harrisburg. While it may be out of place to call particular attention to a patented process in the reading columns of a technical journal, I believe that the advance made by Dr. Gamble in the perfection of his binder is of considerable importance and interest to practically every reader of this paper.

A binder, in order to be suitable or available for briquetting purposes, must be made up of ingredients that are plentiful and, as a rule, like the coal dust from which the briquets are made, should be a byproduct that has little or no value in other industries. It should preferably be all carbon. With this idea in mind, Dr. Gamble selected what is known as sulphite pitch as one of his ingredients. This pitch is obtained from sulphite mills and is a byproduct in the preparation of wood pulp for paper making.

LARGE QUANTITIES ARE AVAILABLE

According to reports of the Geological Survey, upward of 1,500,000 tons of this material goes to waste every year. It is an objectionable product, since it pollutes streams, and in many states laws have been passed prohibiting such contamination. This material can be recovered readily and, under the names of "glutrin" and "binderine," is being used extensively as a core binder in steel and iron foundries in preference to flour, molasses and the other materials used heretofore.

The sulphite pitch is all carbon, makes an excellent binder, does not soften on ignition or from heat (which is an important consideration), is easily distributed through the coal dust and is in itself an ideal binder in every respect, except that in its natural state the material is not waterproof. For this latter reason up to the invention of Dr. Gamble's process for waterproofing, it was considered useless for the briquetting of fuels.

The Gamble process of waterproofing sulphite-pitch binder briquets makes use of an oil-base waterproofing compound. Several of these waterproofing mediums are available at a reasonable cost. The waterproofing material used at the Harrisburg (Penn.) and Richmond (Va.) plants hereinafter mentioned is a low-melting-point asphalt obtained from the distillation of an asphalt-base oil; the particular substance used is what is known as "hydrolene," which has a melting point of from 110 to 150 deg. F. (cube water test).

It might be stated that neither the sulphite pitch nor the low-melting-point flux or asphalt is new. However, the method of putting the two together and using only a small percentage of the waterproofing to make a waterproof briquet has taken considerable time to develop; in fact, suitable oils having no binding qualities in themselves can be used. Such oils used alone as a binder have been tried and found useless for briquetting anthracite or other low-volatile coals.

The sulphite liquor, as obtained from the pulp mills, usually contains from 2 to 7½ per cent. of cellulosic and resinous material dissolved from the wood by sulphurous acid. In concentrating this liquor it is necessary to first neutralize this acid and then evaporate it in quadruple-effect stills until the liquid contains from 50 to 52 per cent. of solids, is of about 32 Bé. gravity and weighs approximately 10½ lb. to the gallon. The remaining portion of this sulphite pitch is water.

The method of introducing and using these materials is first to coat all the particles of coal dust with the sulphite pitch during the first stage of the mixing operation, diluting it with water if necessary so as to cover every particle of coal. The mixture is then heated and partly dried in the mixers, after which is introduced from 1 to 1½ per cent. of either the low-melting-point asphalt, water-gas tar or other material of an oily nature that acts as a waterproofing medium, in

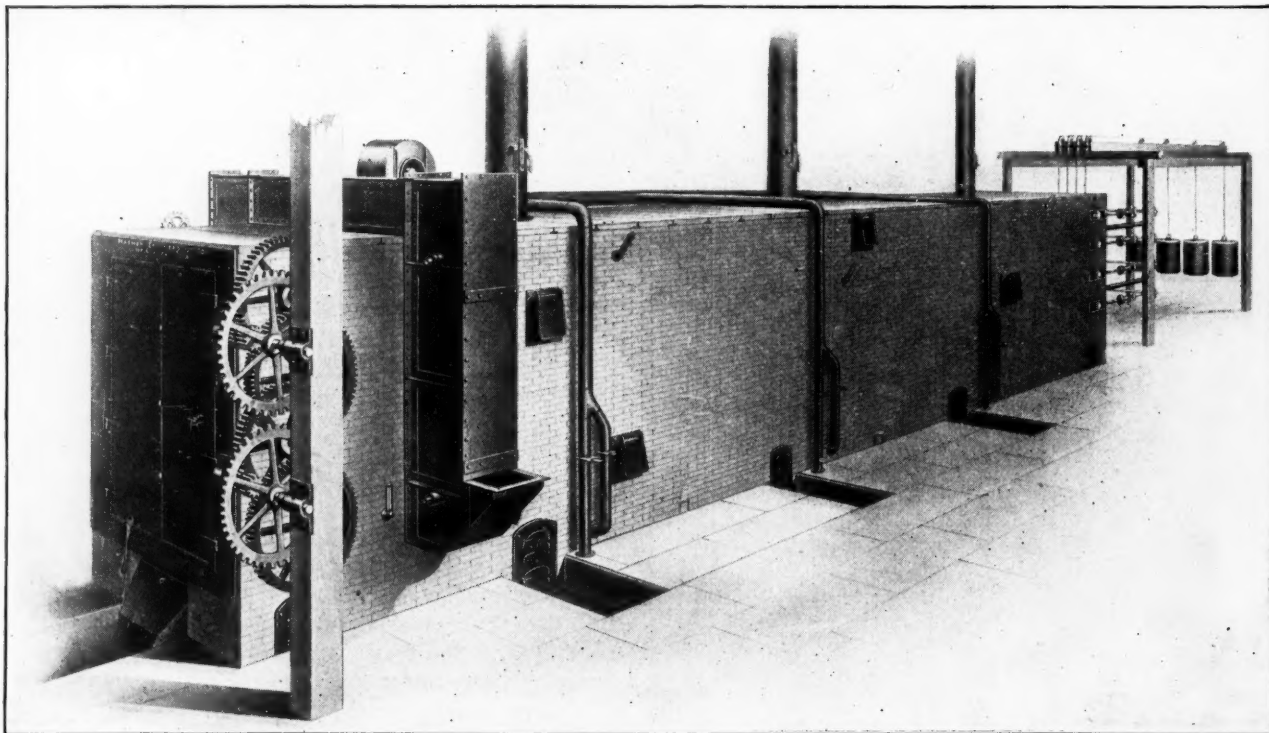


FIG. 5. OVEN WHERE THE BRIQUETS ARE BAKED BEFORE MARKETING

order to put a coating on the outside of the sulphite pitch covering each particle of coal; this is followed by further mixing, with increasing heat. In order to make a hard product it is necessary to carry out this mixing thoroughly before the material is delivered to the press, as stated above, the briquets being formed under a pressure of about 3000 lb. per square inch.

The briquets coming from the press will stand a drop of 10 to 12 ft. without breaking. They are delivered by a belt conveyor to a special, continuous-moving type of drying oven, where the remainder of the moisture in the sulphite pitch is first evaporated slowly. This causes the binder to harden and set as hard as the coal.

The briquets, without being disturbed on the carriers, then pass to another portion of the oven, where the temperature is considerably higher. Here partial distillation of the oil takes place so that the oil vapor penetrates to all parts of the briquet, practically converting the sulphite pitch back into its original resinous state. It is then entirely waterproof, without pos-



FIG. 6. EXACT SIZE AND SHAPE OF AN ANTHRACITE BRIQUET

sessing the disadvantage of softening under heat or while undergoing combustion. Depending on the nature of the waterproofing compound, the final temperature to which the briquets are subjected sometimes runs as high as 600 deg. F. The briquets are then cooled before being deposited in the briquet bin ready for delivery to consumers.

The final product is harder, will stand more handling and produce less breakage than the hardest prepared size of anthracite. With this binder the hardness of the briquets is practically the same, regardless of the hardness of the coal dust from which they are made. The briquets are free-burning, are easily ignited and will hold fire longer than anthracite. They are of the over-stuffed pillow shape and weigh about 2 oz. each. The question of the most suitable shape or the size of the briquet is highly important, and depends on the purpose for which it is intended to be used.

Before the enterprise at Harrisburg was made public to the trade the briquets had been sold in that city since early in the spring of 1916 and had been used by upward of 1250 householders without a single complaint being received by the Gamble Fuel Briquet Co. In fact, the company has on file a number of letters from consumers who state that they prefer these briquets to standard anthracite coal as they give more heat, last longer, produce little or no smoke on ignition and do not clinker. This latter is an important con-

sideration. The briquets are retailing at the present time at from 40c. to \$1 per ton below the local retail prices of the best quality of prepared sizes of anthracite coal.

The plant has never been able to fill half the orders received, and arrangements are now being made for doubling its capacity.

In December, 1916, after the success of the Harrisburg plant had been demonstrated, the Southern Briquet Coal Co., of Richmond, Va., also equipped a small plant of approximately 10 tons per hour capacity, using the same process and briquetting Virginia anthracite and Pennsylvania anthracite culm, selling the product to the local trade in Richmond.

The arrangement of machinery is such that material travels logically from stage to stage during its entire journey through the plant. The plants are entirely automatic. The ovens are built for indirect heating and are so arranged that they may be fired with either coal or briquets.

The cost of manufacture will vary to some extent with the location, size and capacity of the plant. At the present prices of material and labor the cost of the binder per ton of briquets produced is 74c., labor 26c., fuel for power plant and oven 22c. and wear and tear 8c., making a total of \$1.30 per ton of briquets. To this must be added the cost of coal dust and overhead expenses. These two latter items will vary considerably, depending on where the plant is located.

Some of the different machines forming a part of this equipment are shown in the illustrations, as are also some views of the two plants now in operation. Another plant, which is under construction in central Pennsylvania and equipped to use the same binder, will be of larger capacity. The binder, process and machinery are patented. The plants described were designed and equipped by the Mashek Engineering Co., of New York City.

Venus in the Dark

"I never was afraid of spooks or rats or snakes or things like that in a coal mine, but whenever I hear of a woman coming down I always shudder."

The speaker was a Welshman, a former state mine inspector. He was talking to some friends.

"Did a woman ever cause you any bad luck, Dick?" asked one of the group.

"She did," answered the ex-inspector solemnly. "It was when I was shotfirer in No. 8, the crackerjack mine in the district."

* * *

The woman—girl, she looked—appeared at the pit-head one afternoon just before the miners came out and the shotfirers went down. She made a beeline for Dan Gronoway, the superintendent, who was standing at the door of the engine room, in his pit clothes.

"Mr. Gronoway?" she smiled, at the same time extending a gloved hand, which the boss tried to dodge with his sooty paw, but couldn't.

"The same, ma'am," replied Dan, who was always polite to women folks, no matter what stress he might be under.

"My name is Ethel Hunter," she told Dan, as if she were imparting valuable information, "and I am

the traveling representative for "The Women's Wonder," a most delightful magazine, and——"

"Thank-ee, ma'am," quoth Dan, backing off, "but I can't read anything but Welsh, you know."

"I'm not trying to get you to subscribe," she explained, as she followed him up. "I want to sell it to your men for their wives and daughters. When I secure so many subscribers I get a course in the university free."

"I see," returned Dan; "well, I wish you luck. Some of the men will buy 'most anything; maybe they'll take a chance with you—there's no tellin'."

"I want to go down in the mine, Mr. Gronoway!"

"Gosh!—I mean 'shucks,'" apologized Dan.

"When can I go?"

"Ye can't go at all."

"But I have an order from Mr. Thurston, the manager."

"Then let Mr. Thurston come and show ye around."

The young woman looked troubled.

"They told me you were such a nice man," she observed disappointedly.

"They be tellin' lies on me," returned Dan, not unkindly. "But look ye, Miss——"

"Hunter—Ethel Hunter."

"Miss Ethel Hunter, do you know that it be as dark as a stack of black cats swimming in a tar-barrel down there; and there's mule trains whizzin' by every blessed minute, and some of the cross-entries has got mud in 'em clear up to your—er—shoe tops, and there be long-tailed rats as big as cats down in that place."

Dan put his best licks in and thought she'd turn to him with a grateful smile, and call the job off. But she didn't. She burst into tears, leaning her head against the engine-room door casing. Several of the men gathered about during the talk, and looked sympathetically at the pretty young petitioner.

"And I wanted to be a teacher so as to support my poor old mother and little brothers and sisters," she sobbed.

Here an auburn-haired man who was just about to go down with the firing squad stepped up.

"I'll get down early in the morning and go around with her, Dan," he said.

Dan shrugged his shoulders.

"Her blood be on thy head, Dick," he said. "And what will the Mistress think if you go promenading about in the dark with a strange maiden?"

As the seven o'clock whistle was splitting the air above the engine room of No. 8 next morning, the young woman with a mission appeared at the tippie and sought her cavalier. She was attired in a coarse black garment, and wore a heavy shawl over her head, but it did not hide seductive little curls which peeped out over the white forehead. At the "bottom" Dick filled and handed her a pit lamp, which she took gingerly and transported at arm's-length. The shotfirer loaded her with advice, which she took with murmurs of gratitude.

When they got on the far entries where the miners were at work, the young woman proceeded to business. The sooty men bashfully withheld their hands, but she didn't mind a little dirt, she said, and shook them anyhow. In most of the rooms it was not necessary to go into details about the widowed mother and little

children before the dollar came for "The Woman's Wonder." Where they didn't have the money she took an order on the treasurer. Not a man balked. It would look mean, they thought, to turn down a handsome woman who had defied the horrors of the underground to visit them.

The woman solicitor had a way of talking which made each man think she had gone down purposely to see him. They had never heard of "The Woman's Wonder" and wouldn't have known it from an almanac of the vintage of '76, but they did know that this young woman knew how to talk and that she was brave and pretty. The way she side-tracked for mule trains and crawled through crosscuts filled her shotfirer guide with admiration. She stopped timbermen staggering under heavy loads, flagged mule drivers, waylaid pit bosses and even tackled the trapper boys for a year's investment in "The Woman's Wonder," and everybody seemed to feel the richer for the opportunity.

At the end of three days she had made a complete clean-up of the mine. Every man jack had contributed, and "The Woman's Wonder" was booked for an increased subscription list of at least 300.

Miss Hunter explained to her faithful guide that she had been through the mines out West, and experience had taught her that she could get five subscriptions below where she got one on top. She confided that she even sold her magazine to miners who couldn't read English, and had no trouble in doing it. The men thought as long as she was brave enough to come to them at their underground toil she had earned the right to their subscription. It was the comradeship of the mine that won them.

* * *

"Did she get hurt?" asked one of the listeners of the ex-inspector who was telling the story.

"Oh, no," he answered, "she got through all right."

"Any accident at the mine?"

"No."

"Then what made you say it was unlucky for——"

"When we had thoroughly covered old No. 8—you see I was the guide," explained the story-teller, with a blush—"and had visited every man in it, I was wondering whether my services had been appreciated. The cage finally landed us on top, and she turned to me with that same pleasant smile that had fetched the dollars down below. She began fumbling in a little handbag she carried, and said:

"'You have been good to me, my friend, and——"

"'Dont mention it,' I told her.

"'Yes, but I will,' she declared. 'But for you I never could have found my way through all those dark holes. You have been with me three days—your time is valuable—here, take this.'"

The speaker paused.

"Twenty-five dollars?" one of the listeners suggested.

"It was a package, neatly tied up with pink ribbon," said the inspector. "In it was a photograph of herself. It was a good likeness—showed everything but the nerve."

"I still don't see any hard luck in that," ventured one of the group.

"Well, I never particularly objected to art and fine pictures myself, but the Mistress——" and the inspector shook his head sadly.

Efficiency of Coal Production

By C. B. OFFICER
Claremont, N. H.

SYNOPSIS—*The efficiency of coal production is measured by the number of tons produced per day per man. For the whole country, this has increased about as has the proportion of machine-mined coal. Careful balancing of width of room and depth of cut with the thickness of bed is necessary in order to secure maximum output.*

THERE are so many different ways of expressing the efficiency of a mine, all depending upon the basis of comparison selected, that for the sake of clearness the meaning of the word efficiency as used in this article will first be defined. As here understood, the efficiency of coal production will be taken to refer to the number of tons of coal mined per day per man employed at the mine. This efficiency can be found for any mine by dividing the average daily tonnage (expressed in short tons) by the average number of men employed. Writing this in the form of an equation, we have:

$$\text{Efficiency} = \frac{\text{Average daily tonnage of any mine}}{\text{Average number of men employed}}$$

In Table I the unit of efficiency is given for the total production of bituminous coal in the United States for the years 1891 to 1915. There is also a column showing what percentage of the coal was machine-mined. By machine-mined coal is meant all coal won by the use of any of the following types of machines: Punchers, radially mounted punchers and chain breast, shortwall and longwall cutters. The figures given in the table were taken from the reports of the Bureau of Mines on the yearly production of coal.

From these statistics it is at once apparent that the increase in the number of tons mined per day per man has corresponded closely with the increase in the per-

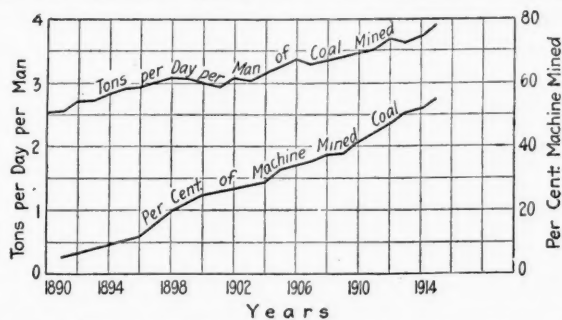


FIG. 1. CURVES SHOWING PER CAPITA PRODUCTION AND PER CENT. OF MACHINE MINED COAL

centage of machine-mined coal. In order to show this more clearly the two curves shown in Fig. 1 have been drawn. The upper curve shows the tons per day per man and the lower the percentage of machine-mined coal. From these two curves, unless some radical changes are made, it can be estimated that about the year 1928 all coal will be machine-mined and that the efficiency of the mines will have increased to about 4.9 tons per man per day.

The figure of 4.9 tons per man per day is low in comparison with the results now obtained in certain localities. Table II contains the same facts as Table I, but applies to Logan County, West Virginia, instead of to the whole of the United States. There are certain mines in the county that have a higher figure than the average, while others are lower. This county was taken for comparison because most of the mines are new operations and have installed the latest type of equipment. They also have a higher percentage of machine-mined coal.

The figures in Table II show a large discrepancy from the results as estimated for the whole country, with all the coal machine-mined. It is to be admitted that many factors influence the output in tons per day per man aside from the machine cutting equipment of the mine, yet it must also be admitted that the machine cutting equipment affects the output in tons per day per man more in proportion than any of the other factors.

From the figures in Tables I and II it is at once evident that if the efficiency of the mines is to be increased the latest type of machine equipment should be installed and that all coal should be machine-mined as soon as possible. The figures also show in a general way that it would pay the mine operator who considers only the financial side to scrap the older types of equipment and install modern machinery.

At the present time the most efficient type of mining machine for general room-and-pillar work is the so-called "shortwall machine," and for longwall work the

TABLE I. COAL PRODUCTION FOR THE UNITED STATES

Year	Average No. of Men	No. Days Worked	Total Tonnage	Tons per Man per Day	Per Cent. Machine-Mined
1891	205,803	223	117,901,238	2.57	5.26
1896	244,171	192	137,640,276	2.94	11.86
1897	247,817	196	147,617,519	3.04	15.35
1898	255,717	211	166,593,623	3.09	19.46
1899	271,027	234	193,323,187	3.05	22.74
1900	304,375	234	212,316,112	2.98	24.86
1901	340,235	225	225,829,149	2.94	25.61
1902	370,056	230	260,216,844	3.06	26.75
1903	415,777	225	282,749,348	3.02	27.58
1904	437,832	202	278,659,689	3.15	28.21
1905	460,629	211	315,062,785	3.24	32.82
1906	478,425	213	342,874,867	3.36	34.66
1907	513,258	234	394,759,112	3.29	35.11
1908	516,264	193	332,573,944	3.34	37.04
1909			379,744,257		37.52
1910	555,533	217	417,111,142	3.46	41.72
1911	549,779	211	405,907,059	3.50	43.89
1912	548,632	223	450,104,982	3.68	46.80
1913	571,882	232	478,435,297	3.61	50.70
1914	583,506	195	422,703,970	3.71	51.70
1915	557,456	203	442,624,426	3.91	55.00

longwall type of continuous cutter. There are several different kinds of each type of equipment, but the advantages of one make over another will not be discussed here. However, at this time, when it is especially desirable to increase the output of coal, all machines immediately available should be employed, since machine-mining by any method is more efficient than hand-work.

Since most mines in this country are operated on the room-and-pillar system, or some of its modifications, the details of successful shortwall machine-mining methods will be reviewed.

The first principle for the successful operation of machine-mining is to have a satisfactory wage agreement or understanding between the employer and employee.

There is no hard and fast rule for obtaining the best results, but it has been found that wage agreements for both the machinemen and loaders that are based on the amount of work done by each, measured in tons, places, square feet or cars, is much more satisfactory than straight day wages. The ton measurement is to be preferred as it has a definite value.

The second principle to be followed in the operation of a machine mine is to concentrate the places, in order that each machine may cut as much as possible. When a place needs to be cut the machine operating in the territory nearest it should be sent there. When machines are traveling about the mine from one territory to another considerable time is lost during which they might be cutting coal.

The third principle is to have the cutting done at night and the loading completed in the day time. If the conditions are such as to require that the cutting and loading must go on at the same time, the work should be so planned that the machines are cutting on one set of entries while the loading is being done in another. With such conditions the haulage trips are

TABLE II. COAL PRODUCTION OF LOGAN COUNTY, WEST VIRGINIA

Year	Average No. of Men	No. Days Worked	Total Tonnage	Tons per Man Per Day	Per Cent. Machine Mined
1912	3,419	233	4,196,744	5.25	.....
1913	4,384	208	4,753,516	5.22	.....
1914	5,474	195	6,618,951	6.20	.....
1915	6,121	174	7,164,150	6.73	96.5

not waiting for the machines to get out of their way or vice versa. When the haulage trips are delayed the loaders are held up by lack of cars and the coal output is decreased. It is preferable to have the cutting done at night, as less territory need be opened in order to secure the desired tonnage.

It is quite essential that plenty of power be supplied to each of the machines. This requires that not only a sufficiently large generating set be installed but also an ample sized feed or trolley wire with a good return or bonded track. Many of the delays and breakdowns of machines can be traced directly to poorly bonded track. It pays to have a good return not only because it will save power, but also because it will prevent breakdowns, with a consequent loss in production. An ample supply of power is also an advantage to the haulage system in that the motors can either make the trip faster or pull more cars per trip.

The track should be kept in good condition on curves and roomneck switches. The reason for this is that under poor conditions considerable extra work and loss of time will be occasioned by the mining machine being derailed at these points. A poor condition of track at these places will also slow up the haulage. If the track is in good shape for haulage, it will be more than sufficiently good for the mining machines.

The machines should be well supplied with bits and oil. It is also advisable to have good repair men or electricians responsible for the operation of the machines. In many mines the cost of repairs has been reduced greatly by having the repair men go over each machine every so often, tightening up the screws and nuts and replacing the necessary linings or other parts when worn and not waiting until the parts give out completely and then cause other damage. By following this policy the machines have been kept in continuous

operation, and for this reason a greater tonnage has been secured.

One of the principles for efficient machine operation is to have the depth of undercut as great as possible. In the past it was considered that coal could not be undercut any deeper than its height. The first experiments on undercutting to a depth greater than the thickness of the bed were undertaken in West Virginia. These experiments proved successful, and today it is generally conceded by all that coal can be mined to a greater depth than its height. In some mines the depth of cut is twice the thickness of the bed.

The increase in the cutting efficiency of mining machines provided with longer cutter bars has been due to the greater amount of coal cut per shift per machine (the number of places cut being the same with different lengths of bars) and to a reduction in the repair costs on the machine per ton. As this saving in cutting cost was at once apparent, the longer cutter bars were installed in many mines. After the introduction of the longer bars, the cost of cutting was reduced, but there was not an immediate corresponding saving in the over-all cost of mining or the expected increase in the efficiency of the mine in tons per day per man. The reason for this was that there did not exist the right proportion between the depth of undercut and the width of room.

THREE FACTORS ARE IMPORTANT

In order to meet the requirements of the third principle mentioned for efficient mining, a certain proportion must exist between the width of room, depth of undercut and height of coal. The thickness of the bed cannot be changed, and the width of the room is limited to a certain maximum by the nature and condition of the strata above the coal. Consequently the depth of undercut is the factor that should be varied to secure the right proportion.

The requirement for a correct relation of the three elements is that the amount of coal shot down after each cut should be equal to that which one or more loaders working in a room can load out in either one or two full shifts. That is, the loaders on entering a room that has just been shot should have before them an amount of coal which will give them a certain number of complete days' work, not an amount that they can load out in a day or any number of full days and a part of another. With the rooms all kept to this dimension, the haulage can be planned systematically and the output of the mine increased.

The uncertain element in determining the right proportion is the amount of coal that a loader can send out in a shift. This will depend entirely on the local conditions in each mine. The thickness of bed, the size of cars, the nature of the coal, whether top or bottom rock has to be removed, the dirt bands in the coal and many other features will influence the tonnage that a man can handle. The average number of cars that a loader can handle in a shift should be found by close observation of the actual results obtained at each mine.

In large operations it will be found expedient to divide the loaders into classes according to their various average abilities, instead of having one average apply to the whole mine. The rooms on certain entries where the men having the highest average ability are working

should be driven the maximum width and the depth of undercut for the whole mine determined by that set of conditions. The width of the rooms on entries where loaders of less average skill are placed should then be decreased slightly so as to produce only such an amount of coal as will give these men an even number of shifts' work.

By having the loaders separated into groups according to their ability, the question of equal turns of cars will automatically be settled for men on each entry, since a given number of cars must be sent out from each room per shift. If the loader in any particular room is unable to keep up to the requirement, he should be changed to that part of the mine where the average of cars expected per shift is less. If, on the other hand, a man who is working on an entry where the

average is low is found to have the ability to do more, he should be transferred to a place that requires more cars per shift. It is to be admitted that the turns of cars for all men in the mine will not be the same, but where it can be shown that each man is receiving as many cars as he can handle in a shift the question of an equitable turn is automatically settled without further difficulty.

The main object of this paper is to demonstrate that machine mining is more efficient than hand methods and that if the full efficiency of coal production is to be secured that machine-mining warrants, a great amount of study in each mine must be given to the right relation between the amount of coal cut by a machine and the ability of the loaders to handle that amount.

Practical Wood Preservation*

By W. E. HOYT

Fulton Bldg., Pittsburgh, Penn.

SYNOPSIS—*Decay is a contagious wood disease. It may be prevented by disinfection. For this purpose a creosote oil, nonvolatilizable under 275 deg. C., may be used to good effect. Mine timbers may thus be treated either by spraying, painting or immersion.*

THE question of wood preservation at the present time is of greater interest to the coal operator than ever before, because of the scarcity and high cost of steel and concrete. Where rapid construction is required timber is being used in large quantities, and it is gratifying to note that most of the larger mining companies, as well as a great number of independent operators, are finding it worth while to pre-

serve all their permanent wood construction against decay.

Various time-tested methods that have been found capable of at least doubling the life of timber at a low cost are being utilized, thereby not only eliminating repair bills that are directly traceable to rotting timber, but also conserving our forests for years to come.

The causes of wood decay have been thoroughly discussed in technical papers at various times, and the United States Forest Service has also given the subject much attention. It is sufficient therefore for the purpose of this article to state that decay is a contagious disease of wood.

The method of preventing decay is well established. All investigations have shown that this disease may be forestalled by the permanent disinfection of the wood with an insoluble, nonvolatile antiseptic. The injection of creosote oil under pressure has been the usual means

*Illustrations by courtesy of the Monongahela Wood Preserving Co., Pittsburgh, Penn.

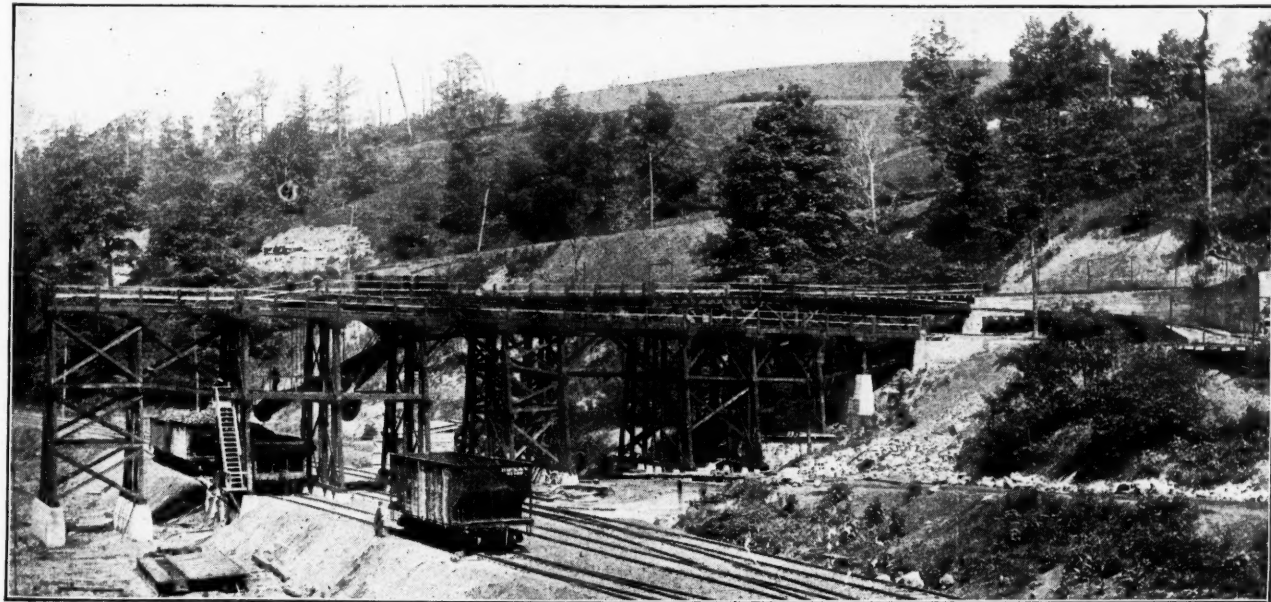


FIG. 1. TRESTLE BUILT FROM TIMBER TREATED WITH PRESERVATIVE AFTER FRAMING

employed to preserve ties and wood blocks used in railroad track and street paving where wear and tear are severe and deep penetration is necessary.

For most mining work, however, timber treated by the pressure-creosoting method has not been found practical on account of the delays in getting deliveries of treated timber, the initial high cost and the fact that the inflammability of freshly creosoted timber is too great. After careful investigation of this subject by many authorities it was shown upon analysis that the

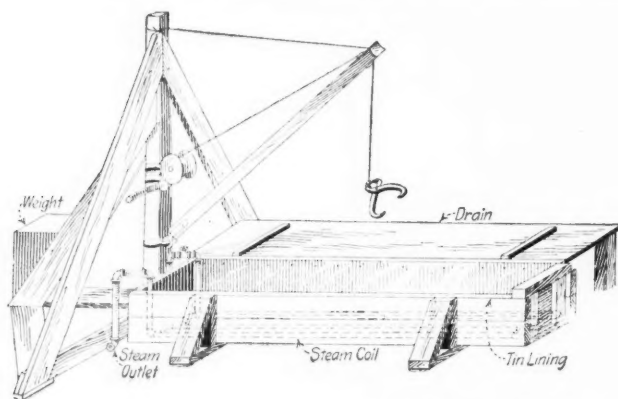


FIG. 2. COMMON APPARATUS FOR TREATING TIMBER WITH PRESERVATIVE

only part of the creosote oil remaining in pressure-treated timber after several years' exposure shows no volatile matter under 275 deg. C. After being treated with creosote under pressure, borings taken from timber that has stood in the weather for a period of 10 years show that practically none of the creosote distilling under 275 deg. C. remains in the wood.

In treating mining timber, therefore, the solution of the problem is to use only that part of the creosote oil that is taken off above the temperature of 275 deg. C. and to simplify the method of application so that the timbers can be treated at the mines without delay and at a minimum cost.

Several distinct advantages accrue in the use of this latter grade of preservative. The inflammability of the wood is decreased somewhat and the oil, being non-volatile, neither leaches nor evaporates from the timber. In addition the oil may be heated in an open tank to above the boiling point of water, without loss.

The grade of oil employed in the methods of treating mining timbers hereinafter described was mostly imported from Germany before the war. As with many other materials, however, it is now being produced commercially in this country.

The question of the quality of the preservative is highly important, and it is evident that the value of a preservative is directly proportional to the amount of nonvolatile pure coal-tar distillate it contains. It is well for the prospective purchaser of a preservative to insist on a statement of analysis from the manufacturer, owing to the "oleums," "sotas" and "ineums," some of which are products of great merit while others are simply "off-grade" oils, convenient for the tar distiller to manufacture and sell at a profit under a fancy name and not at all adapted to the treatment of mine timber by simplified means.

The method of applying the preservative to the wood should be selected only after considering such factors

as the quantity of timber to be treated, the kind of wood, the size and seasoning, and the estimated life of the coal mine where the timber is to be used.

The open-tank method, which consists in immersing the timber, after framing, in a bath of the preservative kept heated to above the boiling point of water, is capable, when properly carried out, of lengthening the life of timber to the point where it fails through wear and tear. The duration of the immersion should be increased in proportion to the dimensions of the timber. Roughly speaking, this is about 10 min. for timbers up to 2 in. in thickness and increases 5 min. for each inch in thickness greater than that.

Timber that is only partially seasoned should be immersed longer in order to allow the preservative to displace part of the moisture. It is not impossible to treat partially seasoned timber by open-tank immersion if the proper preservative is used. Since the oil most suitable contains no tarry matter to seal the pores, complete seasoning may take place after treatment the same as in untreated timber. It is well known, however, that to imprison sap in green timber by a film of tarry matter or paint will hasten dry-rot.

By framing the timbers before treating, good penetration is gained where it is most needed—that is, at the ends and at the cuts—thus protecting most thoroughly the parts that rot first. Timber for long-lived developments should be treated in an open tank, especially where it is to be used for tipples, main-track ties and similar purposes.

The equipment necessary for open-tank treating is so simple and easy of operation that many companies have portable tanks for this purpose, shifting them from place to place and treating ties, tippie lumber and timber for various constructions as required.

The usual form of portable tank consists of a rough wooden box or trough into which a tin lining is fitted, the joints being soldered to retain the oil. This tank is of a length sufficient to accommodate the longest timbers treated, is wide enough to receive about three timbers side by side and is approximately 18 in. deep. A drain board is fitted up to slope into one side of this tank, and upon this the timbers are lifted after im-

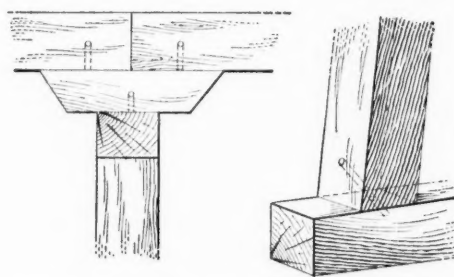


FIG. 3. METHOD OF TREATING JOINTS

mersion, thus allowing the excess oil to drain back into the tank. The drain board serves a double purpose, as it makes a good roof for the tank when it is not in use.

A heat sufficient to maintain the temperature of the bath at 212 deg. F. in summer or winter is obtained by means of live steam that passes through a system of pipes placed in the bottom of the tank. If a small derrick, with a crab for lifting, is added to the equipment, it will be found of great use. By the method just

described, three or four men can easily treat from 5000 to 10,000 board feet of timber per day.

The treatment of structures already erected or in process of erection is often accomplished by brush-coating the timbers with the preservative, which should preferably be heated in cold or damp weather. The joints are coated thoroughly before the timbers are erected, and when built the whole structure is given a thorough painting with the preservative.

As a maintenance policy and as a safety precaution, the special method of treating joints and contact points on old standing structures shown in Fig. 3 has been adopted by some companies. Of course, the method is subject to variations, depending on the condition of the joint to be treated.

Power spraying machines will be found advantageous on extensive work, since they save labor and give good results. Many operators who have employed the brush-treatment method have found that the life of their structures has thereby been greatly increased. Double life, at least, may be expected of timber that has been thoroughly brush-treated with a high-grade preservative oil. Telephone companies, and those that use poles for line construction and the transmission of power, state that greatly increased life results from coating these poles at the ground-line with a high-grade preservative.

As far as the necessity for treating timbers is concerned, little needs to be said. We are lucky, in these days, to get timber delivered at all, regardless of specifications. With prices soaring, quality inferior and labor scarce, it is folly to install untreated timber inside or outside the mine unless the life of the operation is to be short. The timber we get is cut at any season of the year, contains a large percentage of sapwood because smaller trees are being cut, and often is already infected with decay. The insects and worms that are frequently present also tend to shorten the useful life of the timber.

To be sure, we can all point to tipples and structures that have withstood the elements for 20 years or more, but the stuff that went into them when they were built was not the kind of material being used nowadays. It was probably boxed hearts of white oak, or similar high-grade timber of a quality that is practically unobtainable at present. Wood preservation strictly follows along the lines of "intelligent conservation," which is being so much talked of in reference to war-time economies, so that now, if he never did before, the coal operator should treat all his permanent wood construction.

Gross Power = Net Power + Friction

Every now and then the subject of friction comes up, and in almost every instance more light is thrown on the importance of using greater care to eliminate friction as much as possible. P. B. Liebermann, chief engineer for the Hyatt Roller Bearing Co., of Newark, N. J., recently made some interesting tests in order to find out how much power is wasted in friction by different types of bearings. Mr. Liebermann has taken a subject that has been shrouded in considerable mystery and turned it into a most understandable proposition.

The amount of power that can be saved on a certain machine, or upon cars, depends wholly, of course, on the part friction is playing in the total power consumption. The formula for any system of power transmission or transformation is as follows:

$$\text{Gross power} = \text{net power} + \text{friction}$$

Net power, in the case of a lineshaft or other shaft installation, is the power transmitted. Friction is the bearing friction caused by the shaft rubbing in the boxes. This bearing friction is a dead loss.

Net power, in the case of a machine tool, is the power actually used to remove the stock from the piece being machined. Friction loss, which is comparatively high, includes the bearing friction, gear friction and the slippage of the belts (if any). The bearing friction is the greatest of these items.

Net power on mine cars, or anything running on wheels, is zero when running on a level track. Friction alone makes up the gross power expended. And the greatest part of the friction takes place in the bearings.

When the cars run on a grade, the effect of gravity has to be considered. The formula for mine cars reads thus:

$$\text{Gross power} = \text{friction} + \text{gravity or train weight} \times \text{per cent. of grade}$$

When the track is level, the item we have called gravity drops out and we have

$$\text{Gross power} = \text{friction}$$

A large number of tests have been made at the Hyatt plant to ascertain how much the bearing friction can be reduced by the use of roller bearings.

It is customary in speaking of friction to use the term coefficient of friction. This coefficient is obtained by dividing the load on a bearing into the retarding force on the shaft surface. The coefficient of friction

$$= \frac{F}{W} \text{ where } F = \text{the force of retardation and } W = \text{the total pressure between the bearing surfaces.}$$

The value of the coefficient of friction depends on temperature, quality of lubricant and degree of lubrication. With plain bearings, the quality of lubricant is of the greatest importance. The danger of breaking the oil film between the shaft and bearing is ever present. The tests made have proved that Hyatt roller bearings, on the other hand, are far less sensitive to quality of lubricant, since the rollers carry the oil back and forth over the bearing and bring about ideal lubrication.

The coefficients of friction for different kinds of bearings vary considerably, as may be seen from the following:

HYATT FLEXIBLE ROLLER BEARINGS

High duty type.....	0.0025 to 0.003
Planished race type.....	0.004 to 0.005

PLAIN BEARINGS (STEEL SHAFT)

Cast iron.....	0.03 to 0.20
Babbitt.....	0.025 to 0.08
Brass.....	0.03 to 0.16

With the two coefficients of friction known, those for plain and for roller bearings, an engineer can readily determine just what power saving can be effected by the use of roller bearings in any particular car or machine. He can then decide whether the saving in power is large enough to justify the use of roller bearings instead of plain journals.

Lively Discussions at Charleston Institute—II

EDITORIAL CORRESPONDENCE

SYNOPSIS—*Discussions of mine-car gages, long chutes in place of conveyors, planes and monitors, storage-battery locomotives and the gas in coal. Governor Cornwell emphasizes the duty of increasing production commensurate with all demands of the industry.*

THE afternoon session of June 5 was enlivened by a discussion of the mooted question of track gages. West Virginia is a good place to raise such a question, for it has a large variety of gages and has mines in the Pocahontas region, in which the cars are even of standard railroad gage. There were no Pocahontas representatives present to defend the use of cars of such liberal dimensions.

Mr. Zern, who introduced the question of the track gages of mine cars, said that there were at least 22 in use, varying from 22 in. to 56½ in. H. H. Stoek, of the University of Illinois, said that he could add another gage, namely 20 in., which could be found in a certain mine in Illinois. In that state gages from 20 in. to 54 in. were found. Mr. Keely said that the mines of the Cabin Creek Consolidated Coal Co. had no less than 3 gages—42, 44 and 48 in.—the variation arising not from vacillation in the management, but from the fact that the track gages of the consolidation were determined by the many managements of the companies which opened the mines. He declared that no one liked the 48-in. gage. Mr. Haas stated that 42 in. had been made the standard at the mines of the Consolidation Coal Co., but a few old mines which were nearing their allotted life had a gage of 22 in. It had never seemed well to scrap the old transportation equipment and put it up to date.

UNDECIDED BATTLE OF THE MINE-TRACK GAGES

Mr. Harmon told the members that the Madison Coal Corporation, of Illinois, had near St. Louis a mine with a 24-in. gage. Mr. Zern said that the Westinghouse Electric and Manufacturing Co. was endeavoring to get the mining fraternity to accept 42 in. as the best all-round gage for mine equipment, the matter applying continually to more elements of mining, and now of interest in the construction of mine cars, locomotives and coal-mining machinery. In reply to a representative of the Westinghouse company he said that the Pocahontas mines demanded a 56½-in. gage because it desired to get a car 72 in. wide at the top, and any gage less than the standard railroad gage (56½ in.) made it necessary to provide an excessive overhang.

The next matter presented was the use of surface chutes for the transference of coal from beds above the railroad to the tippie level. Mr. Huddy said that his company had at one time an expensive chute—it cost \$65,000—but the management had to give it up after much experimenting. The coal would either overrun everything or it would obstinately refuse to be budged.

Besides, the chute brought the total of small size up to 40 per cent. whereas 25 per cent. was obtained now

the chute is no longer in use. He found that by using monitors with small bins much better results could be obtained than by the use of chutes. He declared that any chute tended to clog. Even long vertical chutes had given him trouble when once allowed to fill up.

Mr. Keely's experience was quite different. He has a sheet-iron tubular chute, 120 ft. long, 36 in. in diameter, built in 5 sections and inclined at an angle of 36 deg. It works admirably. Moreover, it steadies the operation of the mine, having a capacity of about 30 tons. Of course, it could not be left full in cold weather, as the coal would freeze. He said that the use of the tubular chute made it possible to save wood.

The chute was simple and self-contained; furthermore, if a fire were to start at the foot of the chute, it would not spread up the tube. A chute made of lined plank, on the other hand, would in a few minutes be a mass of flame. Mr. Keely was so well satisfied with this short chute that he was proposing to build one 300 ft. in length. He said he thought that perhaps the grade he had happily chosen was just the right grade for the kind of coal and the type and size of chute, but as it was adopted not for any particular reason or as an embodiment of any previous experience of similar chutes, his success could only be ascribed to luck.

ROLLING AND SLIDING FRICTION CONTRASTED

One member said that he made experiments with potatoes for a potato chute. When a potato was at rest it would stand on a board at a considerable angle. If caused to roll it would attain an extreme velocity on that same slope. This would be the difficulty with a round coal. At rest it would be provokingly quiescent, but once set in motion it would bound almost anywhere.

Mr. Keely said in reply to this that his was the gas coal of the Cabin Creek region, and added that he did not believe that the vibration of the tippie in any way aided in keeping the chute in effectual operation. No one seemed to have had Mr. Huddy's sad experience with chutes. Mr. Brennan said his chute did not pack. He thought it sloped at 42 deg. He prevented the coal from traveling too fast by placing wings to drive the coal from side to side. He did not have over 10 per cent. of degradation in excess of what he would experience if more usual equipment were installed.

WHERE COAL WAS COKED BREAKAGE DID NOT MATTER

J. W. Paul said that 25 years ago three tubes, 300 to 500 ft. long, were in use at Elmo in the New River district. These gave excellent satisfaction and were used for many years. The officials did not let the coal stay in the chutes, so they had no trouble from packing or freezing. Nor were the officials troubled about the breakage of the coal. They were pleased rather than not with that feature, for the fuel was all used for coking purposes, and the finer the coal the better the coke.

At the evening session Governor John J. Cornwell addressed the members on the duty of the nation in the present crisis. He declared that 500,000 men would be called to the colors shortly, and that if the war lasted 18 months the army of the United States would be in-

creased by five separate drafts of that number of men until no less than 3,000,000 men were under arms. Such a large withdrawal of the men from industry must have a profound effect on all departments. There was therefore a great need for increased productivity, for soon the hands of few must do far more than has hitherto been done by the hands of many.

Governor Cornwell then quoted Thomas Babbington Macaulay—"Produce, for God's sake, produce." It sounded good enough doctrine, but an expert from Pittsburgh said he could hardly avoid the inference that the governor had his authors mixed. Reference to John Laing's address, which followed, has been made already in the article published last week.

STORAGE-BATTERY LOCOMOTIVE IS INDORSED

A. J. King had been invited to give a paper on "The Facts About Storage-Battery Locomotives" for the meeting of Wednesday morning, but when the session convened he was not present. The president himself evidently wanted light on the subject. Like all people who have not used the storage-battery locomotive, he did not believe in it—at least was not sure about it—and he said that he had thought at first that the best title for the paper would have been "The Truth About the Storage-Battery Locomotive."

The disposition to show up the storage-battery equipment in its true and even in its least amiable light was evident, but the people who have least to say against it are those who have used it. P. T. Colgan, general manager of the Spruce Valley Coal Co., who brought a C. K. Davis locomotive way back in 1913, said he believed he was the pioneer in that use of the storage battery in the state of West Virginia. Though the Davis locomotive was the first in the field and was no longer manufactured, Mr. Colgan declared that it gave reasonable service despite the abuse it received and the "ignorance" shown in its handling. The firm had promised that the locomotive battery would last for two years, but it only remained in service 14 months, during which time it was used all day and at night. However, Mr. Colgan said that in his opinion, when it was laid away, "the battery didn't owe us anything." The new battery having two compartments of 18 cells was hooked up reversed and lasted 12 months only. These were lead batteries.

MR. COLGAN'S PREFERENCE IN GATHERING UNITS

Mr. Colgan said he preferred the other type of battery, but was told that he could not get sufficient power from Edison batteries with the space allotted in the construction of the locomotive. He found, out, however, that he could place 72 Edison cells where he had formerly had 36 of another type. Though the units were not so powerful, the aggregate effect was greater.

He said he found his lead batteries were often heated to 110 deg. before they arrived at the charging station, and when he charged them he was only able to keep the temperature down to 140 deg. under the conditions in which charging had to be done. He could not manage to keep the temperature down to 105 deg. as instructed. He found also that the rubber cells had to be renewed at frequent intervals.

His mine foreman was a convert to the storage-battery locomotive. He had previously favored the reel locomotive for gathering, so Mr. Colgan put both of them in

operation, which was quite easy to do as the mine was wired up throughout. The storage-battery locomotive and the reel locomotive were alternated in two separate districts. One day the reel locomotive would take one district and another day that same gathering area would be given to the storage-battery unit. It was found that the latter did 28 per cent. more work as an average in every place where it was operated.

He thought the public laid too much stress on the cost of the battery and forgot the greater life of the armature that resulted from the use of storage batteries. He had run the same armatures since 1913, and they had never even been taken out for repair. The brushes had not even had to be changed. The battery loss was the sole loss to be met. He found that with the Edison batteries it was not necessary for the locomotive to take a lunch at noon. The lead batteries being less powerful in aggregate needed such noontide stimulation.

USE OF STORAGE BATTERIES IS GROWING

Frank Haas said that the storage-battery locomotive had won its way in the mines of the Consolidation Coal Co., and that there were 18 used in the West Virginia division. P. J. Brennan, general superintendent, Consolidation Coal Co., Jenkins, Ky., said that there were 20 combination locomotives of the General Electric and other types in the mines of the company in Kentucky, the Exide battery being used in all cases. He added that storage-battery locomotives were superior to reel locomotives or mule haulage for gathering work.

A representative of the General Electric Co. being asked to make some remarks said that 50 per cent. of the gathering locomotives now being installed were either combination or storage-battery locomotives.

Mr. Haas then read his interesting paper, on the major mine accidents, reprinted in our issue of June 16, pp. 1026-1028. In the discussion it was pointed out that the absence of ethane in the gas of the mines of the Consolidation Coal Co. was an argument in favor of believing that the gas was generated by the coal and not merely stored in its crevices or occluded in its substance. Mr. Haas argued, however, that in the process of time the ethane probably became eliminated.

INCREASED GAS NOT FROM THE CRUSHING OF COAL

He was asked about the two mines that in his paper he had shown gradually increased in output of methane for a month and five months respectively and then kept practically uniform for many months. He said that the mines were not producing coal. The work done was simply the driving of a series of parallel entries from which no rooms were broken off. There was therefore no appreciable increase in the pressure borne by the coal, and the growth of this pressure was not the cause of the increasing emission. There was therefore only one variant condition in the experiment, the length of the advancing mine headings.

T. L. Lewis made an extempore address on "Welfare Work in the Coal-Mining Industry," emphasizing the wonderful results attained in the Shenango Valley from the work of an institute started by the miners for their mutual advantage. R. Dawson Hall's paper entitled "Are Contributors to Our Mining Journal Successful Mining Men" concluded this morning session.

(To Be Concluded)

The Labor Situation

General Labor Review

While labor unrest is growing in the United States in general, the coal industry seems to be doing better than ever. Only in western Kentucky is there an exception. In five counties of that state 60 per cent. of the mine workers are said to be idle.

Wages have been low in the nonunion mines of West Kentucky and this may be held to justify a strike which seems so like a mutiny in the face of the enemy. Furthermore, the strike comes as the culmination of much expensive union activity predating our entry into the war. The union probably figures that it can ill afford to throw away the munitions accumulated for this offensive.

But even granting these facts, a strike appears ill advised at this time. It does seem that these difficulties should be put off till the great national difficulty is fully settled.

In Canada the Vancouver difficulties appear to be settling themselves. The Calgary troubles, which recently appeared insoluble, are temporarily at an end and the mines in that district have resumed work. In fact, the mine workers of District No. 18, embracing the unionized portion of Alberta and British Columbia, are now all at work.

Anthracite Mines Work More Steadily

It is our plain and pleasant duty to commend the anthracite mine workers for their closer adhesion to their contract and for their steady work. Still there are scattering exceptions, like the strike at the Brisbin colliery. That strike occurred on Saturday, June 23, and ended on June 26. About 600 men were idle. The company had laid off 20 men, alleging that it discontinued operations in that part of the mine because the work was unprofitable.

It is said, as if in rebuttal, that these men were laid off because they disputed the rates to be paid. But really the company's story about the unprofitableness of the section of the mine tallies with the statement of the union men. The men who were laid off expect to find work at collieries near their homes.

The strike at Hallstead, an operation of the Delaware, Lackawanna & Western R.R., lasted two weeks before it was called off. It was a needless and discreditable violation of the contract. It will be remembered that some of the men had religious scruples about belonging to the union because it was not an organization under the control of the small denomination to which they adhered. Only two men had this uncompromising fidelity to their church. They were perhaps over-stubborn and illiberal. Can any less be said of the unionists who refused to work with them? The two men have found jobs at other collieries, and so peace is at length secured.

On June 28 the men at No. 11 mine of the Lehigh Coal and Navigation Co. went on a button strike, throwing the colliery idle and laying off about 700 employees.

Pennsylvania "Doing Its Bit"

The mine workers in central and western Pennsylvania are working steadily, as becomes good citizens. One hesitates to mention the few sections where the exceptions occur, because a single exception too much elaborated in narration often looks larger than the rule.

At the Yukon mine in Westmoreland County, operated by the Youghiogheny & Ohio Coal Co., the men are still on strike for union recognition. One can excuse strikes for this purpose where they predate the entry of the United

States into the war, but those started now should be suppressed by the Committee on Coal Production; and no one should be more insistent on this being done than the labor members of that committee.

The mine workers have no real grievance, as they have been given the 8-hour day without a change in the wage rates and are better paid than anywhere else in the state. All the mines in Pennsylvania now are on an 8-hour basis except those in the Connellsville coke district.

The strike situation in the Somerset County district has not materially changed recently.

The Money Is Due, Pay It

It will be remembered that the mine workers of Montgomery County, Illinois, went on strike recently to compel the unionization of the Schram glass factory at Hillsboro. In strict compliance with the terms of their contract they were fined \$10 for this strike by the companies for which they worked. When the money was deducted from their pay they struck again, but returned to work the next morning. They are going to make an effort to have the fines remitted. The provision relative to fines in the agreement has usually been a dead letter. It has generally happened that the company has sought peace by remitting it. The union officials are favorable to such fines, but the mine workers do not sustain them.

Hyphenates Strike in Illinois

The mine workers at the Kortkamp mine at Hillsboro, in Montgomery County, Illinois, have been on strike for some time, the excuse given being that the deadwork scale is too low. Of course, this is not an adequate cause for quitting, for the miners ratified their scale and must abide by it.

But the trouble seems to have a still less honorable cause. It is said that there is a decided pro-German element at the mine which desires to hamper the coal output so as to aid the country's enemies. Federal officials are said to be making an investigation.

Much literature from the Industrial Workers of the World was found, and other evidences of hostility to the Government discovered. The element in the local union which is making the trouble is said to have bitterly opposed the action of the district union in subscribing for \$100,000 of Liberty Bonds. Four hundred men are laid idle.

Miners employed at the Deveraux mine, in Springfield, after being on strike for a week on account of a difference over the wage scale, finally reached an agreement and returned to work four days later.

Big Strike in Western Kentucky

The big strike that the United Mine Workers of America had been planning for July 4 came off on July 3, and 60 per cent. of the men are said to be idle. Just what companies are involved did not, on going to press, appear. The area affected embraces Webster, Henderson, Union, Christian and Hopkins Counties.

There are about 12,000 mine workers in these counties, and according to the claims of the union officials, three-fourths of these men are now members of the union. The organizers, of whom there are about 40 on the ground, anticipated that all the mines in the five counties would be closed except those of the St. Bernard Mining Co. and the

West Kentucky Coal Co., each of which operates many mines. There has been no disorder to date, although in the five counties there have been a few arrests of both union and nonunion men who were charged with carrying concealed weapons.

Details of the Montana Scale

The agreement between the coal operators and mine workers at Billings, Mont., which took effect June 1, makes the following changes in schedule: Wages are increased 50c. per day, but barnmen are given an increase of \$10 per month. Pick-mined coal is advanced 7c. per ton on a mine-run basis. The price paid for drilling, loading and shooting coal after machines in all districts except the Brown and Tracey fields advanced 6½c. per ton. In these the advance is 5½c. per ton, measured on a mine-run basis.

Except at Stockett and Sand Coulee, machine-mining rates are advanced fourteen hundredths of a cent per square foot, to be divided between runner and helper, while in the other fields, including Brown and Tracey, the machine rate is advanced two-tenths of a cent per square foot.

Washington Pays the Highest Wage

After being in conference since May 28, the United Mine Workers of America, district No. 10, and the Washington Coal Operators' Association signed a wage agreement on June 14 under the terms of which Washington gains the distinction of paying the highest wage received by coal miners in any state. The previous agreement between the miners and operators had a year yet to run, but the operators, recognizing the changed conditions, abrogated the contract and signed the new one.

The schedule of increases granted includes a raise of 50c. a day for all classes of labor, specified and unspecified, except miners, timbermen and tracklayers, who are to receive \$4.49 a day. Picking-table men are given an increase of 60c., and proportionate raises are granted in other classes of work. The new Washington day-wage scale follows:

DAY-WAGE SCALE INSIDE MINE

	Raise	New Wage		Raise	New Wage
Miners.....	\$0.54	\$4.49	Rope riders.....	\$0.50	\$4.00
Timbermen.....	.54	4.49	Locomotive engineers.....	.50	4.00
Timbermen's helpers.....	.50	3.80	Hoist men on develop-		
Tracklayers.....	.54	4.49	ment work.....	.50	3.80
Tracklayers' helpers.....	.50	3.80	Cagers.....	.50	4.00
Motormen.....	.50	4.00	Cagers' helpers.....	.50	3.80
Drivers.....	.50	4.00	Pumpmen.....	.50	3.80
Parting boys.....	.50	2.50	Labor not specified.....	.50	3.80
Greasers.....	.50	2.45	Boys on hoists.....	.50	3.10
Trappers.....	.50	2.20			

* Except on main slopes or auxiliary slopes.

DAY-WAGE SCALE OUTSIDE MINE

	Raise	New Wage		Raise	New Wage
Main hoisting engineer.....	\$0.50	\$4.25	Second blacksmiths.....	\$0.50	\$4.00
Power-plant engineers.....	.50	4.10	Blacksmiths' helpers.....	.50	3.50
Compressor engineers.....	.50	4.05	First carpenters.....	.50	4.30
Development engineers.....	.50	3.75	Second carpenters.....	.50	3.50
Firemen.....	.50	3.65	Car repairers.....	.50	3.50
Cagers.....	.50	3.75	Choppers.....	.50	3.50
Cagers' helpers.....	.50	3.35	Screeners (men).....	.60	3.00
Teamsters.....	.50	3.50	Screeners (boys).....	.50	2.40
Greasers.....	.50	2.05	Moving picking table (men).....	.60	3.00
Couplers.....	.50	2.20	Moving picking table (boys).....	.50	2.40
Dumper, cross-over.....	.50	3.35	Labor not specified.....	.50	3.25
First blacksmiths.....	.50	4.30			

DAY-WAGE SCALE FOR MEN IN AND AROUND MINE

	Raise	New Wage		Raise	New Wage
Electricians:			Machinists:		
First class.....	\$0.50	\$4.30	First class.....	\$0.50	\$4.30
Second class.....	.50	4.00	Second class.....	.50	4.00
			Electricians and machinists' helpers.....	.50	3.50

All yardage rates in pitching seams, where coal is exclusively mined on a yardage basis, to be increased 12 per cent. Car rates increased from 6 to 12c. per car. Coke-oven rates to be increased approximately 14 per cent. Contract tonnage rates in Roslyn-Cle Elum field are ad-

vanced 10c. a ton. Machine tonnage rates increased 8c. per ton. Machine cutting 2c. per ton. Tonnage rates Tono mine to be increased 6½ to 7c. a ton. Mendota tonnage rates to be increased 7¼c. a ton.

Western Canada Goes Back to Work

The recommendation made June 20 by R. F. Green, the commissioner appointed to settle the labor troubles of District 18 of the United Mine Workers of America, was immediately accepted by the Canadian Government. That Government thereupon appointed a coal-mining man with power not only to advise, treat, threaten and cajole, but also to take charge of the mines and give orders.

This commissioner is W. H. Armstrong, of the firm of Armstrong & Morrison, construction contractors, Vancouver, B. C. His control embraces all the coal mines in the Crows-nest district and in British Columbia. Mr. Armstrong was born at Stratford, Ont., in 1857, and was first employed in the bridge-construction department of the Grand Trunk R.R., Ontario Division. Later he entered the service of the Canadian Pacific R.R. There he attained the post of mechanical superintendent and master mechanic. From 1883 to 1887 he acted as trainmaster and general roadmaster for that company at Vancouver, B. C.

Later, in 1897, he became a general contractor, operating first alone and then in partnership with the late Dan McGillivray. It is noted that he was the first man to bring an automobile to Vancouver. That was in 1899.

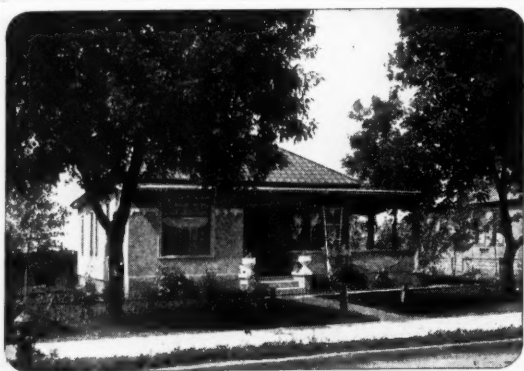
This says something for Mr. Armstrong as a business and railroad man. It may be added that he was for several years managing director and general manager for the Nicola Valley Coal and Coke Co., which operated the Middlesboro colliery in Nicola Valley until the reconstruction or sale of the property to the existing Middlesboro Collieries, Ltd. The first-named company was not at any time among the largest producing collieries of British Columbia, nor was its operation a financial success. Mr. Armstrong's triumphs have not been in mining, but in construction work such as the steel bridge, Granville St., Vancouver.

He has a difficult task, as the operators are exasperated at the frequent demands for a change in scale. They were willing to concede nearly all that was asked by the mine workers' policy committee: A new scale 7½ per cent. higher than the one tentatively agreed to by the recent joint conference and the appointment of a commission with a representative each from the mine workers, operators and Dominion Government, which commission was to make an inquiry every four months as to the increased or decreased cost of living and then within 30 days to amend the wage scale to conform with such increases or decreases. But they would not agree to a contract without a penalty clause for strikes in violation of the contract. They alleged that the desire to break the contract was evinced by the refusal to maintain the clause by which strikes were duly penalized.

This penalty clause the operators have been compelled by Mr. Armstrong to forego and the men have gone back to work, but the labor forces are now badly scattered. Work in other lines has been plentiful. Many of the mine workers have taken jobs at figures much lower than they would accept around the mines, and as a result have subjected themselves to much bitter complaint from those whom they have displaced.

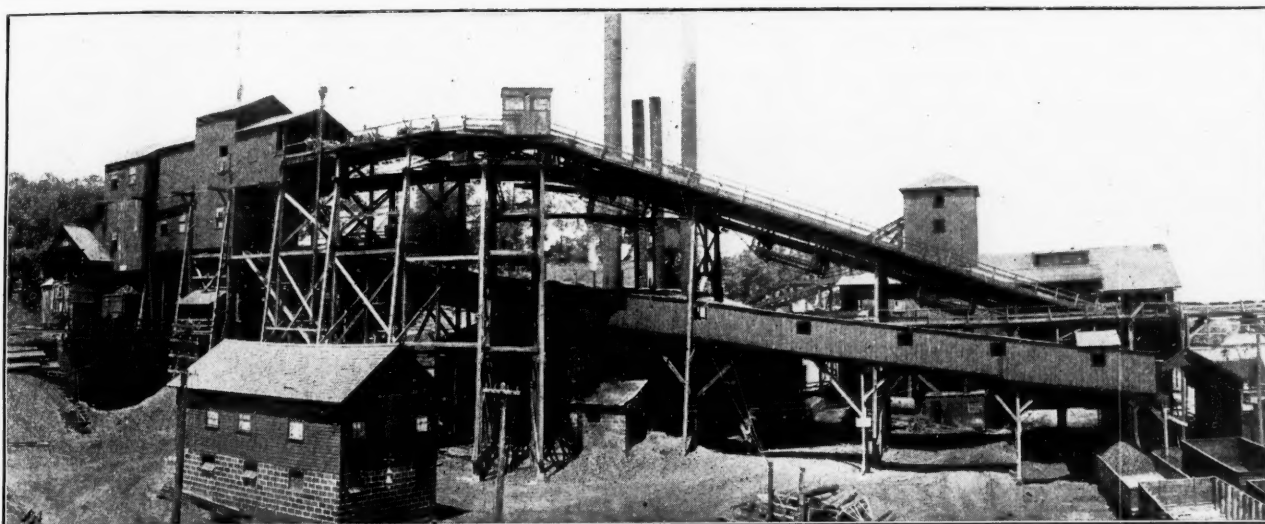
Limburger Dutch Go on Strike

Limburg lies near the German and Belgian lines and even thrusts itself boldly between those two countries. It was the province the Germans were alleged without truth to have actually crossed on their way to Belgium. Ninety per cent. of the Limburg miners are said to be on strike for a minimum wage and an 8-hour day. Many Belgian soldiers interned in Holland who have been working in the mines are said to have joined the strike, which involves 70,000 men. The Dutch get the greater part of their coal from these mines in the province of Limburg.



HOMES
Owned *by the Thrifty Miners*
of
Oglesby, Ill.





Longwall Mining in Northern Illinois*

BY EDWARD T. BENT

President, Illinois Coal Operators' Association, Chicago, Ill.

SYNOPSIS—*An account of the introduction of longwall into the northern Illinois field and of the early trials of this method of mining, which is successful only where physical conditions are favorable. Longwall not only saves coal but makes it possible to secure 80 per cent. of the fuel in prepared sizes instead of 43 per cent. or less.*

MY first recollection of the longwall field of northern Illinois is of being carried, a child of four, from the railway station, located midway between "Kenosha," now Oglesby, and the "Location," now Jonesville. This was two years after the ground had first been broken for the Oglesby mine, and when it was just beginning to produce coal.

The miners in those days were paid \$3 per ton, and the coal sold at \$6 per ton. Coal from banks at Lowell on the outcrop was hauled by team to Tonica for shipment. The Carbon mine of the Northern Illinois Coal and Iron Co., and the No. 1 mine of the Illinois Valley Coal Co., both now owned and operated by the La Salle County Carbon Coal Co., were opened earlier.

In those days both Second Vein and Third Vein coal was being produced (in some cases, as at Oglesby, both from the same opening) and both by the room-and-pillar system. Longwall mining came later.

I have never ascertained whether the longwall system in northern Illinois was introduced first in the Wilmington field or in the Third Vein, but I remember the anxious days when it was attempted to introduce it in the Third Vein field. It called for harder work and greater skill on the part of the men. Labor viewed it with suspicion and fought its introduction fiercely; and never, until we withdrew from the Second Vein (Seam No. 5, State Geological Survey) could we get an adequate labor

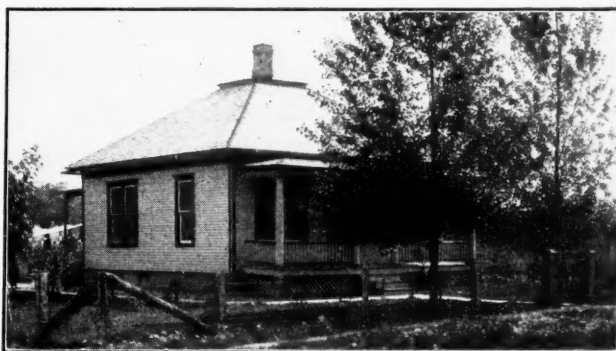
supply in the Third Vein. The experiments in one section of the mine being indisputably successful, it was extended to the entire mine; and in the course of a few years it had displaced the old method of mining in every Third Vein mine in the district.

LONGWALL GIVES MORE COAL AND A BETTER FUEL

Some things about the longwall method always appealed to me—first, getting all the coal instead of two-thirds of it or less, and of that 100 per cent. getting 80 per cent. in prepared sizes, instead of 65 per cent. or less; in other words, getting in prepared sizes 80 per cent. of the entire seam instead of 43 per cent. or less; second, using intelligently and controlling safely the forces of nature instead of vitiating the air, damaging the product and adding to the hazard by the use of powder. What can be more attractive in the abstract in a business not ordinarily considered over-attractive?

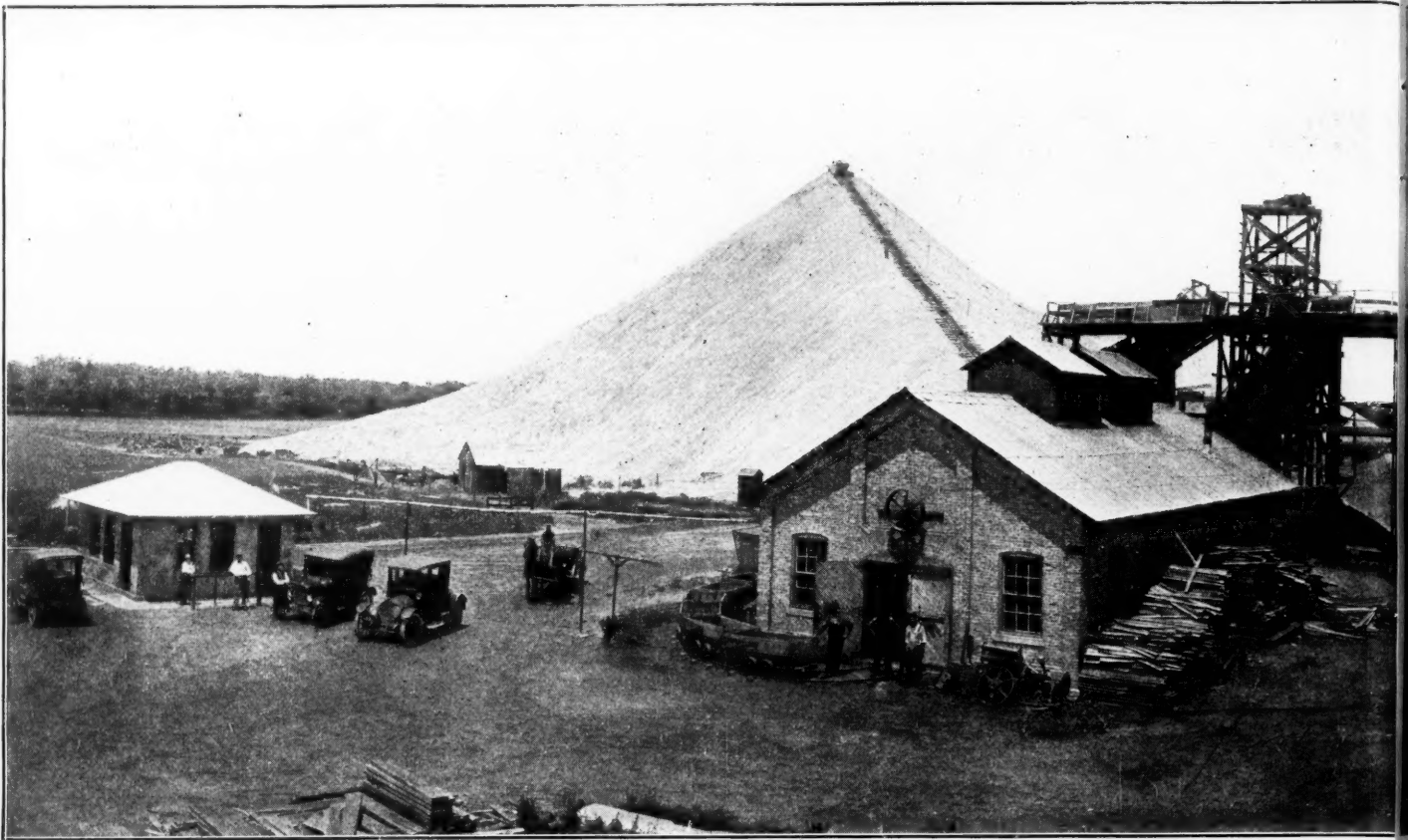
As should be expected in the oldest field of the state, most of the operating men have had to do with crude developments of an early type, and to revamp them as best they could.

The most serious physical handicap is now, I believe, about to be overcome for the first time. I refer to the fact that in all our mines, in varying proportion, sand is found in the floor material, causing what is called



TYPICAL NORTHERN ILLINOIS MINER'S HOME

*Condensed from an address made at the Illinois Mining Institute meeting, May 18, 1917, at La Salle, Ill.



OFFICE, ROCKDUMP, CAR-REPAIR SHOP, TIPPLE, PUMP HOUSE AND

"hard mining," reducing the earning power of the men, decreasing the output seriously, and adding to the cost of production. By undercutting these sections with machines in the coal, as is already being done, this difficulty is entirely eliminated. Some time somebody in the field will open a longwall retreating mine. Then the possibilities of the field, now potential, will be measured; but this will hardly be in our day. The original investment is too great.

EXPECT MACHINES TO RAISE WAGES 75c. A DAY

Not enough time has elapsed to speak conclusively as to the extent of the benefit to be derived from the installation of mining machines. The indications are that they will increase the daily earnings of the miners from 50 to 75c., increase the output per man employed underground from one-third to one-half, increase the supply of miners to the extent required, and make them more prosperous, contented and better consumers. At the same time, it will materially decrease the cost of production, secure the extraction of all the coal, decrease the cost in both material and labor of maintaining the roadways, concentrate the underground operations, thus facilitating ventilation and decreasing the cost of maintaining more extensive workings, and largely reduce the number of closed places.

Let no one think because this field has suffered that it is not a great and promising one. This is a marvelous spot in a wonderfully resourceful state. The Third Vein coal is almost as good as the best in the state, and very much better than most of it. It is located in the very heart of "God's country," nearest to the great northwestern markets, and traversed by a

number of the greatest coal-carrying roads. The home consumption of fuel is increasing by leaps and bounds. One will go far to find such a combination of mineral and agricultural resources, high-grade limestone for cement manufacture, valuable clays for various uses, glass sand of an excellent quality and three veins of coal of workable thickness, two of them being of standard, marketable quality. All this mineral wealth is overlaid with high-grade farm land.

PERCENTAGE FREIGHT INCREASE TO HELP PRICES

While the cost of production of Third Vein coal is higher than that of the thick seams of the state, the freight rates to the North and West are materially lower than from the other fields of Illinois, and when on an adequate relative basis enabled the field to compete successfully. With the increasing cost of transportation and the necessity for higher freight rates, the tendency from now on should be, as rates advance, to correct the inequalities from which the field has suffered.

Those of you who have visited other mining sections of the state, as I have, know how unattractive the usual mining town is, and how much more inviting is the life of the coal miner in northern Illinois. Inadequate annual earnings, as the result of irregular employment, has driven away by the hundreds skilled workers who would be only too glad to return to their former homes. Those who have studied the situation, operators and miners alike, confidently hope that this will be the tendency, in greater or less degree, from now on, as the mines electrify.

Longwall is a good thing where the physical conditions are favorable, as in the Third Vein—a thin seam,



HEADFRAME OF THE LA SALLE COUNTY CARBON CO.'S NO. 5 MINE, CEDAR POINT, ILL.

a strong roof and the right kind of a floor—but it has its limitations, as we learned at Oglesby at an early day, to our cost. We were so enthusiastic over its success in the Third Vein that we tried it in the Second, and it did not work. Men made bigger money than ever, but sometimes they built their places with coal, and sometimes they failed to build them at all!

The inevitable result was squeezes, uncontrollable gob fires and the sudden loss of the workings. They were walled up in 1880, so presumably the fire is out. We shall doubtless reopen there when the Third Vein acreage, contiguous to the mine, is exhausted, if not before, as the coal has a certain value where it exists of normal thickness (4½ to 6 ft.) as at Oglesby, as the quality is somewhat superior to the same seam in the Springfield and Peoria districts, and the mining conditions are fully as favorable. And when both the Second and Third Veins are gone, there is still a considerable acreage of the First Vein (No. 7 of the State Geological Survey), which though friable is of workable thickness and, with an analysis only slightly inferior to the Second Vein, is of merchantable value. But that day is a long way off.

Our Third Vein coal was the first produced in the state. In fact, it was the first coal discovered in America (by the French explorers). It was the main dependence in our territory for a generation. Though the seam is a thin one, as yet we have hardly scratched it. It is one of the most persistent seams in the state, and covers a wide area. Given opportunity, the annual output can be multiplied without bringing the end of the life of the field sensibly nearer.

I must not fail, in closing, to speak of the harmonious and mutually helpful relations which now exist

between the various mining camps and interests of the field, as compared with the jealousies, suspicions and friction of early days. Much has been learned in this respect, and it points the way toward still better things in the days to come. (The plant at the head of the article is that of the Oglesby Coal Co., Oglesby, Ill.)

Washrooms at Illinois Mines

Illinois Act of June 26, 1913, reads: "Every owner or operator of a coal mine . . . or other like business in which employees become covered with grease, smoke, dust, grime and perspiration to such extent that to remain in such condition after leaving their work without washing and cleansing their bodies and changing their clothing will endanger their health or make their condition offensive to the public, shall provide and maintain a suitable and sanitary washroom at a convenient place in or adjacent to such mine . . . for the use of such employees." A following section requires adequate and well heated quarters and facilities for this purpose, including lockers, hot and cold water, etc. Held, that this law is constitutional. "In the case of *Starne vs. People*, 222 Illinois, 189, the court held that a similar act passed in 1903, which, however, only applied to the owners or operators of coal mines, was unconstitutional on the ground that it was special or class legislation; that the Legislature cannot require the owners or operators of coal mines only to provide and maintain washrooms for their employees, for the reason that such a law would place upon mine owners or operators a burden not borne by other employers of labor, and such enactment would be special legislation, and therefore unconstitutional and invalid."

Editorials

War and the Progress of the Union

THE war has been the basis of a mass of misinformation, spread by cranks who were more ill-intentioned than really deluded. The war, we were told, was to bring the privileges of labor to a terrible end. In fact, it was even asserted that the capitalists hatched it for this sinister purpose, though the statement never even convinced the speaker who uttered it, much less his audience.

We have the war now, and we find just what every diligent observer has noticed, that almost invariably from the beginning of time successful war, like famine and pestilence, augments rather than restricts the privileges of the worker. To begin with, it creates a sympathy between all the people in the country, and from that excellent feeling the workman gains because "those that have not" can always gain more from "those that have" than "those that have" from "those that have not."

The workman also tends to gain because labor is in demand. It is doubtful though whether that gain is comparable with that arising from his own increased output. In the final analysis, men's wages consist rather in manufactured articles than in money, and the more economical of labor and material production is, the greater pay in manufactured articles can the worker secure. War always aids in promoting this economy, and so aids the worker. In fact war, by stripping off the shams by which the employer and the employee both invest their relations, makes for more economic operation and more prosperity.

But these are not the only changes. The guilds, and their successors, the present-day unions, gain rather than lose strength as a result of a successfully waged war. There has been an immense gain in union adherents in northeastern West Virginia and in the Maryland field. Progress has been made in the New River field. In the Pittsburgh district many new wage contracts have been signed.

In southeastern Kentucky the union has also increased its numbers, and in that region it was formerly almost wholly unknown. Mountain Ash, Brush Creek, Tejay, Coalman and Kettle Island now have local unions, and there are three locals at Harlan. Peabody and Newcomb, just over the line in Tennessee, are also unionized. In the western end of Kentucky unionization has been rapid, and one of the companies is trying to meet it by reviving an old injunction.

Then there is Alabama, which has now more local unions than it had unionists about eighteen months ago. It is alleged that there are 9310 members. That may be an excessive estimate, for it is 40 to 50 per cent. of all those employed in the coal mines of the state. John P. White has been touring the district and helping to secure new members.

Colorado is also being rapidly brought into the union fold, and John P. White is going down to that state to

secure new adherents. He will probably obtain them. The unions are practically unopposed, for the companies hesitate now to discharge those who spend their evenings villifying and seeking to injure those who employ them.

The war is the goad by which the operators are being kept in line. They cannot say any more, "Advance my interests or I will not advance yours." Meanwhile the union is allowed to go about doing its missionary work. If Mr. White's speeches are truthfully reported, they do him no discredit, but much of the proselytism to the union is probably not so fangless.

The gain to unionism will be a gain to the workman if the workman rises properly to the opportunity. If he uses judgment in the conduct of his affairs, one cannot but rejoice that his affairs are increased. But if he uses poor judgment, the outcome will be bad for himself, his employer and the nation. We are not sure that the workman will not be wise, that opportunity will not train him. Mistakes will be many, of course, but in the end perhaps it will be found that the workman has not only got what he wanted, but also has got what was best for him and best for the country at large.

Where Is the Book for the Miner?

OUR book reviewer recently lighted on a breezy little pamphlet entitled, "How To Build Up Furnace Efficiency," by Joseph W. Hays, and found that the author has inserted this motto on the first page of the book proper: "Never read a book until you have read the author's preface."

Now Mr. Hay's preface is good, but misleading. It would serve a book that has yet to be written, which we hope he or someone else will soon write. What is more, we hope it will be the forerunner of a number of books addressed to the workingman and not to the technician—racy books with cartoons and lessons smoothly conveyed in simple words with happy mannerisms.

There is no reason why we should not try to reach the common man. As Lincoln said, "The Lord must have loved common men or he would not have made so many of them." We cannot see why book writers do not see it the same way and write for common men, a homely story of their daily work and the how, the where and the why of it without too many baffling words and difficult constructions.

But let us quote Mr. Hays' preface:

Let us stop writing for technical men who are already well grounded in all the theory of engineering. There are relatively few of such men as compared with the great multitude who want results first and who are content to let theories rest until results have been accomplished. Treat the engineering subject in a really popular way and your book will be read by appreciative thousands. Treat it in a really technical way and it will be read by a few hundreds.

The unlettered fireman may become an expert flue-gas analyst and reach the top notch of efficiency in the combustion of fuel, without knowing or caring what the atomic weight of carbon may be. It has been represented, and it is generally understood, that the contrary is true. No more mischievous representation was ever made with reference to any engineering proposition. It is costing the power plants of the country millions of dollars. The average steam plant wastes a quarter of its fuel. It will go on wasting that quarter until it is recognized that the men to stop the waste are the men who are doing the wasting.

It will not be disputed that your fireman is able to read a thermometer and tell how cold or how hot it may be in the boiler room, or that he is competent to use a platform scales and weigh your coal. It is not considered that as a preliminary to using the thermometer one must understand the involved mathematics on which the science of thermometry depends, or that as a preliminary to weighing a barrow of coal one must be able to explain the laws of the lever discovered by Archimedes. You are familiar with scales and thermometers, and you go ahead and use them. You are not familiar with draft gages and gas analyzers—hence you believe that a diploma from a technical school is necessary before you can use them.

Joseph W. Hays remembers to be witty and entertaining in the chapters that follow, and he "puts his ideas over"—for the engineer and manager—but forgets all about the fireman after the preface. He is so like the rest of us. When will somebody write books for the day hand and the piece worker?

Where is the book for the miner? Where are the books for the multitude? It is not until we get the crowd interested that we can reach efficiency. With five men in a mine village reading and the rest relying on tradition, how can we hope to advance. The world is waiting for a regeneration from below, from a new and intelligent working class, and so far we have yet to write the first industrial textbook for such people.

Who Shall Finance the War?

THE cry has come from many quarters that the rich should finance the war. It is said that their wealth should be conscripted. We conscript the bodies of the workers, they say—consciously losing sight of the fact that the bodies of the rich are also conscripted—why not conscript the wealth of the rich also? But we do not conscript the years that have passed. Only the present years of the conscripted are taken. So with the rich we cannot conscript what has been spent—the factories, the farms, the coal mines, the railroads and what not. What we want is the movable wealth, the profit during the years of war.

To put the matter crudely, we cannot throw the Woolworth building and the Harlem bridge at the Germans and so grind them to powder. We cannot turn our plowshares and pruning hooks into shrapnel and cannon, for we must have them during the war as well as in peace. War may destroy the accumulations of normal times, but only to a small degree can it use them.

If, therefore, we want the rich to pay, we must enable them to accumulate the movable wealth out of which payment can be made, or they cannot pay. But the cry is, that during the war all necessities must be sold strictly at "cost plus," and, of course, to be reasonable and just, the things that are not necessary must be sold on the same plan. This means that the capitalist will make only small profits. When he does this, he will have but little ability to finance the war as it should be financed. And yet it does not follow that

the war *cannot* be financed without him or without much help from him if indeed the public should so decree. For the workingmen remain. If they are supplied with all their necessities at "cost plus" during the war, they can well afford, and doubtless would be pleased, to lend 10 per cent. of their earnings to the Government. They will not do this entirely without compulsion, of course. Like the capitalist, they will pay only a small proportion unless there is an even distribution of the burden among taxables.

But if the prices are put on a low basis and the capitalists are made to pay a reasonable tax on profits or lend a reasonable proportion to the Government, there is no reason why the earnings of the workingman should not be conscripted as loans. Those who do not serve in the army avoid the conscription. They should at least be willing to *lend* a part of their earnings—if the cost of living is kept down to a "cost plus" basis. What a change would come if, after the war, every workman had a nest egg of savings as an encouragement to further economy and industry.

However, it is all a vision. The cost of necessary things will be partly regulated and we shall suffer in consequence from the scarcity of some of them; the cost of luxuries will be placed wherever their manufacturers place it; taxes will be placed on the larger incomes and profits; while loans and Red Cross subscriptions will be provided by the patriotically inclined. That is how society is now constituted and it is hardly likely to be changed materially.

Russian Socialists Instruct Ours

THE Russian Government has decided to take over the mines in the Donetz basin, in southern Russia, and make coal mining a state monopoly. The government will allot \$20,000,000 of working capital for the industry, and all the "profits will be used for the acquisition of machinery and for increasing otherwise the technical efficiency of the mines."

So even the Russian Socialist realizes that the workman cannot have *all* he creates. There must be profits—savings of some sort from his labor "for the acquisition of machinery and for increasing otherwise the technical efficiency of the mines."

But the Russians are making yet other provisions. "The Ministry of Trade announces that there will be a large economy in transport as a result of compulsory consumption on the spot of coal of low-heating quality, leaving the better coal for distribution through the empire [commonwealth]."

Many of our people believe that the selling of a lower-grade coal is a fraud on the public, so it is interesting to notice that our Russian allies are compelling the acceptance of poor coal now that the state has the mines. The people who live near the collieries are not allowed to make outrageous specifications, and even those farther away from them may be compelled to be less unreasonable in their demands.

After all, the Russian Socialists are showing some knowledge of economic facts. They are beginning to recognize that the new order is not very different from the old, and that the tyrant of all tyrants is our own human nature and the limitations imposed on mankind by the restrictions of our physical environment.

Discussion by Readers

Mine Lamps

Letter No. 6—At the present time, everyone is talking "efficiency," and employers seem willing and anxious to adopt every measure possible to increase the efficiency of their workmen.

Coal companies have long felt the inadequacy of the light afforded by the old type of safety lamp. Many companies have taken steps to compel their men to use electric lamps of one kind or another. It is felt, generally, that many accidents can be avoided by furnishing the men with adequate light, so that they can see what they are doing and not have to grope about the mine in darkness.

This is certainly one of the best arguments for enforcing the use of good lights, but many employers seem to be more interested when you talk about making the change for the sake of increasing the efficiency of their workmen. It has been but a short time since metal miners used candles for lighting, almost exclusively; and with the use of candles there was always the danger of fires. Now, many metal-mining companies have abolished the use of candles and force their men to use either oil or carbide lights.

Any man who has worked around coal mines cannot help being impressed with the fact that most metal miners use large carbide lamps that hold a sufficient supply of carbide for a full shift. These lamps are fine for lighting the workmen working at the face. A man does not have to move about and take his light with him.

However, when a man is moving from place to place and carrying tools and material, one of his hands must be used for carrying this lamp and his efficiency is impaired. I have noticed that even the brakemen on locomotives, in metal mines, are in the habit of carrying these large cumbersome lamps.

Allow me to suggest that cap lamps would not only increase a man's efficiency but would give him a much better chance to protect himself in case of sudden danger. This would certainly be the case with tripriders and men doing similar work.

Bayne, Wash.

H. L. HANDLEY.

Electric vs. Oil Safety Lamps

Letter No. 3—Referring to the letter of John H. Wiley, *Coal Age*, May 19, p. 883, I cannot agree with him in the opinion that a gauze safety lamp is safer for general use at the working face than an electric mine lamp. It is my belief that, considered as a factor of safety in mining, the portable electric lamp far surpasses the most approved type of gauze safety lamp.

In his letter Mr. Wiley mentioned two points that are well taken. As he suggests, there is a possibility that the electric lamp may give out and cause some annoyance and trouble to the miner, who is then left

in the dark with no chance of relighting his lamp. However, it must be admitted that he has been able to do better work with the light while it lasted than he could have accomplished with an oil safety lamp, and he can take his time in securing another light.

Mr. Wiley, further, draws attention to the fact that a sudden inrush of gas may occur and the miner will not be warned of its presence when using the electric lamp. But one can hardly suppose that the danger from this cause is greater or even as great as the danger of the possible ignition of such a body of gas when the miner is using a gauze safety lamp. The real danger is not in the fact that the miner is "unwarned" of the presence of the gas, but in the fear that the gas may be ignited by the safety lamp, especially if the miner is not really familiar with the behavior of gas and does not know how to act should his lamp suddenly fill with flame.

DANGERS INCIDENT TO USE OF SAFETY LAMPS

If I remember correctly, about 250 miners have been killed by suffocation, when caught by an inrush of gas, in the mines of the United States during the past 40 years. In contrast with this some 7000 miners have been killed by gas and dust explosions in our mines during the same period. Now, the reason of the death of miners by suffocation is that their lamps were extinguished by the inrush of gas, and they were left in the dark and unable to find their way out and escape before they were overcome by the damps. Had these men been working with electric mine lamps, the chances are that many, or the most of them, would have escaped to safety.

In regard to the possibility of igniting a body of gas, I could name a dozen different ways in which this might occur in the use of the gauze safety lamp, while it is practically impossible with an electric lamp that is in good condition and properly handled.

The great advantage in the use of an electric mine lamp is the clear light that the lamp gives, which enables the miner to load better coal in less time. Also, he is able to observe more plainly the condition of the roof and do better work in setting a post or otherwise making himself safe. Moreover, a miner cannot tamper with the electric lamp as he can with an oil lamp by turning up the wick until he smokes the glass or heats the gauze.

In my opinion there is much less danger in the use of the electric mine lamp, should anything occur to reduce suddenly the ventilation in the mine, than in the use of a gauze safety lamp. Many of the latter would be extinguished and, in attempting to relight them, a very serious condition would prevail.

In closing, let me say that it is my belief that every mine should be equipped with one of the approved types of electric mine lamps. It must be remembered, however, that the use of electric lamps does not insure

absolute safety in the mine. It is still necessary to use every precaution to prevent accidents. There is much carelessness and neglect on the part of miners and mine officials in the use of their lamps. Gauze safety lamps should be placed only in the hands of mine foremen, firebosses, mine examiners or shot-lighters, for the purpose of testing for gas; but these men should each carry, besides, an electric lamp in their cap to enable them to make a more thorough inspection of the places examined.

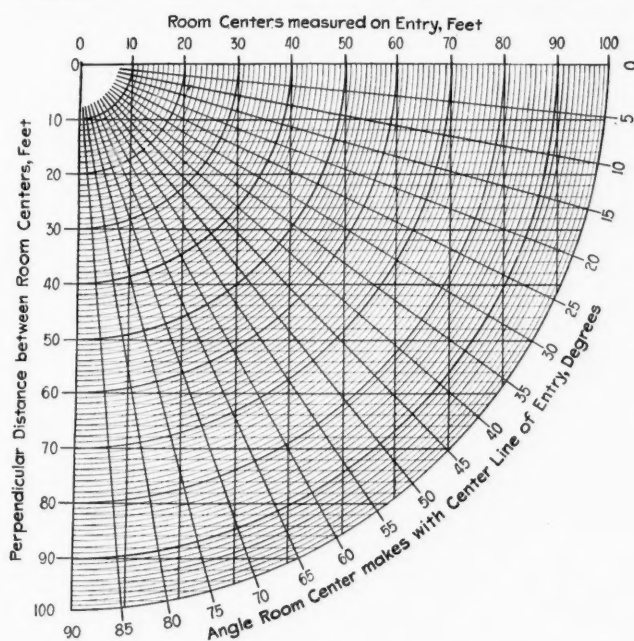
Walsenburg, Ohio.

ROBERT A. MARSHALL.

Calculating Room Centers

Letter No. 1—I noticed the inquiry of "Surveyor," *Coal Age*, June 2, p. 970, in regard to the calculation of room centers when the rooms are turned at an angle with the entry or gangway, and thought it would be of interest to the readers of *Coal Age* to submit a diagram or chart that I designed some years ago for a similar purpose. Since that time it has been in constant use by the engineers of many coal companies.

As shown in the accompanying figure, this chart consists of horizontal and vertical lines spaced at



HANDY CHART FOR MINING ENGINEERS

regular distances apart and crossed by arcs of concentric circles and diagonal lines, the latter radiating from the common center of the arcs and spaced 5 deg. apart, marking angles from 0 to 90 degrees.

This chart can be used in a number of ways, as for instance, where it is necessary to find the projection of a given line on another when the angle between the two is known. Thus, it is useful in finding the latitude and departure for any given course in surveying. It has, besides, a convenient application in ascertaining quickly the distance apart of room centers, measured on the entry, when the rooms make a given angle with the entry, to provide for a certain width of room and pillar.

For example, in the inquiry to which I have referred the distance between room centers measured on the entry is given as 55 ft., and the rooms make an angle

of 50 deg. with the entry. Hence, to find the perpendicular distance between room centers by means of the chart, in this case, follow the radius marked 50 deg. to its intersection with the circle whose radius is 55 ft. From this intersection follow the horizontal line to the scale on the left, which shows the perpendicular distance between room centers to be 42 feet.

When the desired width of room and pillar and the angle the rooms make with the entry are known, and it is required to find the distance between centers measured on the entry, it is clear that the order just given must be reversed. For example, in this case, first follow the horizontal line corresponding to the given width of room and pillar (42 ft.), as indicated by the scale on the left of the diagram, to its intersection with the radial line marked 50 deg. Then, follow the arc of the circle that would pass through this intersection to either scale on the margin of the diagram, and the reading of the scale will be the required distance between room centers measured on the entry.

OTHER CONVENIENT USES OF CHART

When surveying a mine the same chart can be used to find the latitude and departure of any course. In that case, follow the radial line marked with the bearing of the course to its intersection with the arc indicating the length of the course, and from this intersection follow the vertical and horizontal lines respectively to the scales at the top and the left side of the diagram. The scale at the top of the diagram will show the latitude and that at the left the departure of the given course.

In the solution of any right triangle the diagonal line corresponding to the given angle is the hypotenuse of the triangle, its length being marked by the arc corresponding to the length of the hypotenuse. The two scales at the top and side of the diagram respectively will then give the corresponding lengths of the two sides of the triangle.

S. G. HAVERSTICK.

Thomas, W. Va.

Practices in Blasting Coal

Letter No. 5—Allow me to reply briefly to the letter of "Shotfirer," *Coal Age*, May 12, p. 846, in which he considers my previous statement regarding the firing of from 300 to 400 shots in 2 hours as "slightly overdrawn."

It is strange how some men, unacquainted with conditions in a locality, are able to figure out the impossibility of what is actual fact. If my friend, who is inclined to doubt the statement I made, will come to this part of the country, he will soon see that the figures he has given in his letter are far from illustrating the practice of shotfirers in these mines and be convinced that my former statement was close to facts.

That this practice of our shotfirers is not safe or sane is readily admitted; and, until coal operators cooperate with mine inspectors in their attempts to stop such practice, we will continue to have shotfiring accidents resulting from the mad haste of these men to get out of the mine as quickly as possible.

In order to show how two shotfirers will fire from 300 to 400 shots in 2 hours and be out of the mine

and on their way home in that time, let me say that the practice here is for two shotfirers to take different sections of the mine and work toward each other. They do not wait for shots to go off in one room before lighting the fuse in the next place and, in this way, they pass quickly from place to place, and pretend to count the shots as they go off.

The shots are fired by fuse and there will be from two to three shots in a place. The workings are practically continuous, in this locality. The miners work double, and it is easy to see that this number of shots will not cover so large a territory as one might suppose.

One thing is certain, the practice of shotfirers working singly in separate sections of the mine does not conform to the general intent of mining law where shotfirers are employed. Regulations in regard to shotfirers usually contemplate their working in company with each other, although this is seldom the case. It is clear that if this was done two men could not fire this number of shots in the time allotted for them.

—, Ohio.

W. L. MORGAN.

The Negro, South and North

Letter No. 3—I have been interested in the several letters relating to the exodus of the negro from the South. Having spent several months in Southern mines, I will cite a few incidents that came under my observation while there, believing that they will be of interest in this discussion.

So often is it said that "all negroes are dishonest" that I want to cite one instance of an honest negro, and I would say, further, that many white men placed in his position would not have merited the same commendation. The facts as I observed them are these:

The superintendent of a large coal company operating in a certain camp brought a few negroes with him from another state. One of these had a consumptive wife and, during her illness, he contracted a heavy debt at the commissary. When the wife finally died the negro asked the superintendent to allow him to take her to her old home, which was her last request.

CONFIDENCE IN THE NEGRO NOT MISPLACED

As the negro had not the money to do this, the superintendent advanced it to him, on his promise to return and work out the debt. True to his promise the negro returned and started to work, making regular payments to square himself with the superintendent.

It happened, however, that before the debt was paid there was a change in the superintendency and a new man came into office. The books at the commissary were audited and showed the debt that the negro still owed. Instead of permitting the man to work out his debt as he was able, the superintendent gave orders that no further supplies should be given the man until he had paid what he owed.

To make a long story short, the negro continued working, getting a little food now and then from some of the men. It was not long, however, before the man for whom he worked observed his condition and decided that something was wrong. The negro was so weak that he could scarcely work. Upon inquiry his boss learned the circumstances and, from that time, gave him food until his debt was paid at the store.

I observed many instances of cruelty. In one instance a deputy sheriff who was exceedingly rough with the negroes arrested one of them in the evening and, not wanting to take him to the county jail that night, chained him to the rail that protected the flywheel of the hoisting engine, in the engine room. He may have given him a box to sit on, but the man was left there until the following day, when the sheriff took him to the jail.

CONTRACT LABOR IN THE SOUTH

There is a system in vogue in those mines by which much of the work is performed by contract labor. The company gives a white man a certain contract for mining the coal in an entry or a number of rooms. The contractor does no work himself but hires negroes to work for him. In one instance such a contractor drew a large pay and, to my knowledge, had never soiled his hands. Some days he would not even go to the mine. He paid his negroes from \$1.75 to \$2.25 for 10 hours' work. It frequently happened that a negro wanted money before pay day, in which case his pay was discounted one-third.

On one occasion I overheard a group of white men talking in the mine. One of them was telling of a negro triprider that had given him some back talk. He said, "I shot at him and would have got him had he not dodged." This statement was, of course, accompanied with much stronger language than I have used.

At another time a white man knocked a negro down with the handle of a lifting jack and would have beat him to death had the negro not scrambled to his feet and run away. The cause of this assault was what I would term a very slight offense.

I could mention many such incidents, but not caring to be tiresome will let these suffice and only add that, while the white man in the South may know how to handle the negro to best advantage, his methods often appealed to me as much more stern than necessary. Although I never attempted to argue the point while in that region, it is my opinion that this brutality is, in a great measure, the cause of so many negroes leaving the South and finding homes in the North. I imagine any reader of *Coal Age* would do the same under similar circumstances.

FAIRPLAY.

Nashville, Ill.

Uncertificated Mine Foremen

Letter No. 2—The question suggested by "Kentucky," *Coal Age*, June 2, p. 970, in respect to the employment of uncertified men as mine foremen, by reason of the unavoidable conditions of war, is an important one. He assumes that the safety of a mine placed in charge of an uncertified man may be jeopardized and asks to what extent this should be permitted, with due regard for patriotism.

It must be admitted that this question is a difficult one to answer. The coal-mining industry is an important factor in the great service army necessary for the successful prosecution of the war. All will agree that the standards of safety and efficiency in coal mining should not be lowered. But it does not follow that all uncertified men are inferior to those who hold certificates of competency granted them by a state examining board.

There are many undiscovered mine foremen whose record and practical experience in mining prove their competency; while, on the other hand, there are men holding mine foremen's certificates who have failed to make good, and their incompetency keeps them constantly on the move. Others hold responsible positions in mines by reason of the fact that they have a certificate, making them eligible for the position of foreman under the state law.

Viewing the question from a practical standpoint, no one will admit that a mine should shut down because its foreman has been called to the colors and there is no certified man available to take his place. Few will even be willing to say that an experienced practical miner of ability is incapable of filling the place of foreman, though he may be unable to pass the examination required by an examining board and, for this reason, holds no certificate of competency.

COAL MINES MUST CONTINUE TO RUN

It goes without saying that coal mines must continue to run and competent men must be placed in charge whether they are certified or uncertified. It is a patriotic obligation of each state department of mines to coöperate with mine managers and superintendents in the solution of this question.

There are numerous instances on record where uncertified men have been permitted by the mine inspector to fill the position of foreman temporarily, or until they are given an opportunity to prove their competency in the next state examination. Usually, such men prove their ability by passing a successful examination. Again, many men pass the examination who have scarcely seen the inside of a mine and, for this reason, much discretion must be used in the selection of capable men to fill the position of mine foreman.

In his appeal to the American people, the President classes the miner with the farmer, saying, "The work of the world waits on him." Everyone is exhorted to do his best. In the operation of a mine the steady worker, whether he be miner, loader, driver or mine foreman, is a valuable asset in the great service army of the country. The strength of such a worker cannot be over-estimated.

On the other hand, it is the chronic stay-at-home and the indifferent worker who are of less importance in the present emergency. There can be no more striking example of the conservation of forces in the production of needed war supplies than in retaining the steady worker in the industrial trenches at home and sending the man of indifferent habits where military discipline will compel him to greater efficiency.

Thomas, W. Va.

W. H. NOONE.

Assistant Mine Inspector

Letter No. 4—There seems to be some difference of opinion among practical mining men in respect to the employment of assistant mine inspectors, instead of increasing the number of inspectors, where the work demands a larger inspection force. I have followed this discussion with great interest, as the question has been handled by able men who are qualified to give judgment. It would seem, however, that a few of the mine inspectors should give their views, which would be of interest.

The idea seems to prevail quite generally that mines should be inspected more frequently by men who are not interested in the output of coal as much as in the safety of the mine workers. The question on which men differ most, however, is whether greater efficiency would result in the appointment of assistant inspectors than would be attained by increasing the number of mine inspectors, giving to each inspector a smaller territory in charge.

That lawmakers have recognized the necessity of a more adequate inspection of mines is shown by the fact that a bill has been introduced into the legislature of Pennsylvania asking for the creation of the office of assistant mine inspector. The records make clear that a large number of men are killed every year by accidents that should have been avoided, and that probably would not have occurred under a closer inspection of the mine workings.

The problem is how to get the best results with the smallest expenditure of the funds appropriated for mine inspection. Because of the limited knowledge of some who have criticized the work of mine inspectors, it has happened more than once that inspectors who have the safety of men at heart and who have conscientiously done all that the law permits them to do have been much discouraged and hurt. If the difficulties encountered by the inspector were better understood by those who comment on the results accomplished, this would not occur.

ANALOGY OF ASSISTANT MINE FOREMAN

In the discussion of this question reference has been made to the work performed by assistant mine foremen. One writer, *Coal Age*, May 19, p. 884, refers to "the effectiveness of the assistant mine foreman in looking after the welfare of mine workers and conditions regarding the safety of the mine." He adds, "There can hardly be a doubt that the assistant mine inspector would perform an equally important service and constitute a valuable adjunct in the work of mine inspection." Replying to this suggestion another writer, June 9, p. 1009, questions "whether a mine would be better officered by placing it in the charge of two mine foremen instead of a mine foreman and a sufficient number of assistant foremen to help him."

The argument, in my opinion, is good. Few companies would want to pay the salaries of two mine foremen in the same mine and, even so, there would be constant friction, and jealousies would greatly interfere with the successful operation of the mine, while there would be no responsible head.

Much the same condition would prevail in multiplying the number of mine inspectors, although each would have charge of a separate territory. The more inspectors, the greater number of mistakes possible. On the other hand, an inspector and his assistant, in consultation in the same territory, would arrive at a better judgment of matters. If their opinions differed, this would lead to a closer investigation, and the final judgment of the two men would be more satisfactory to the mine management than the arbitrary ruling of a single inspector.

In closing, permit me to say that this is a many sided question and one that has its advantages and disadvantages. It is no wonder that opinions differ.

There have been good arguments advanced on both sides of the question. Now, as I said before, it would be of great interest to learn what some of the mine inspectors themselves have to say in regard to the matter. They are the men who are most concerned in the result and whose opinions, owing to their experience in the work, should be carefully considered. May we not hope to have the expression of opinion from our mine inspectors?

Herrin, Ill.

OSTEL BULLOCK.

Need of Drawing Timber

Letter No. 9—I presume that Edward Jones, who wrote the first letter on this subject, *Coal Age*, May 12, p. 845, and a few others who have written since, speak from experience, but their experience has certainly been quite contrary to my own, as it has always been my practice to draw all timber in longwall work.

While a foreman may allow a miner to let an occasional post remain standing in the gob, under certain circumstances, he runs a big chance of causing the company much expense, as a gob fire is liable to start more easily in such a case. In most longwall mining there is some fine coal or bone that is thrown back in the waste by the careless miner, who knows no better or does not realize the danger of so doing. This material is apt to heat and take fire, especially where it is in contact with old timber and gets a little air sufficient for its slow combustion.

TIMBER LEFT IN GOB CAUSES MINE FIRE

Some years ago I remember working with a team of men on a gob fire that was started under such conditions. Had the fire not been discovered in time it would have shut down the entire mine and thrown some 700 men out of work. The heat of the fire was so great that a man could not stand to work longer than two or three minutes at a time, and many were overcome by the gases generated. It was found, a little later, that there were at least 16 props that had been left in the place, which had started the trouble. This fire cost the company several thousand dollars before it was finally extinguished.

It is, of course, necessary to build cribs in gateways and other places where such supports are required to keep the roads open. But, in my opinion, instead of leaving either "weak" or "strong" props standing in the gob, in longwall advancing, substantial packs should be built tight to the roof. Where packing material is scarce, lines of packwalls can be carried at fixed distances apart and parallel to the roadpacks. Another plan is to build packs in the form of pillars, four square. These should be built in rows parallel to the face and at regular distances apart.

Some time since I was working in a longwall mine where the roof broke for 300 ft. along the face of the coal. The reason for this was that the men had left timbers standing in the gob. Had the men been at work at the time the break took place, many would undoubtedly have been killed. Following this accident the regulations in that mine were very strict in regard to drawing all timber as the face advanced. I remember that the deputies came around regularly and stayed until the timbers were drawn. The miners were

compelled to do this themselves, or else the expense of the work would be charged to their accounts.

What Mr. Jones and others advocate as having proved an advantage, in their experience, has unquestionably been a great disadvantage in other districts. In my opinion the safest practice is to draw all timber in longwall work and build good packwalls so as to produce a regular uniform settlement of the roof and prevent any undue pressure being thrown on the coal.

McWhorter, W. Va.

JOHN OLDROYD.

Letter No. 10—I have had considerable experience in longwall mining, in Scotland and in different parts of this country. For 20 years I was employed in the northern part of Illinois, and I want to say that the system of longwall mining practiced in that district is, I consider, the best to be found anywhere.

In all my practice, from mine laborer to mine foreman, in longwall mines, I have not seen a single instance that I would regard as being favorable to the drawing of timber as the working face is advanced.

The timbers are generally set in rows parallel to the face, and it usually happens that the third row back from the face is breaking about the time that a new row of timbers is being set. From two to three rows of timbers are always required to protect the miner while at work at the face.

In my opinion the only time when timbers should be withdrawn, in longwall mining, is when building roadpacks. No timbers should be allowed to stand in these packs, because when the timbers are broken by the settlement of the roof they may bend outward, in which case they will push the packs into the road. The miner can always take out these posts with safety, and he does this knowing that they may destroy the roadpacks if left standing.

ARGUMENTS IN SUPPORT OF LEAVING TIMBER IN GOB

It often happens where the coal is hard and does not break readily under the roof pressure, setting the props fairly tight will serve to throw the weight of the roof forward onto the coal and cause it to break more readily. Again, the roof is often shelly and contains slips or partings, giving it a tendency to fall should the props be taken out. Since this makes the drawing of timber dangerous, and since 99 per cent. of the props left standing in the gob are broken just beyond the safety line, there is seldom any need of a miner risking his life in drawing this timber.

In longwall mining it is often the case that rock can be taken to the surface and dumped at less expense than it can be stowed away in the gob. The question of expense is an important one in mine management and is always taken into consideration in the handling of rock. If it costs less to gob a car of rock than to haul it to the shaft, hoist and dump it on the surface, this is done.

When one considers, however, that it costs on the average 70c. a car when rock is unloaded in the mine, as compared with 20c. a car when it is dumped on the surface, it is easy to see that a great saving is possible by taking the rock on top instead of packing it away in the mine. Four acres of ground will hold all the rock taken out of a mine in 25 years.

Wellston, Ohio.

R. J. PICKETT.

Inquiries of General Interest

Market Prices of Coal

I have been unable, at times, to fully reconcile certain market quotations published in *Coal Age*, with the prices at which the same coal is sold at the time. I want to ask, for example: Can we analyze the quotations on New River and Pocahontas coals at Norfolk and Newport News and ascertain what are the actual factors that go to make the price?

It is stated in *Coal Age*, Apr. 28, p. 769, that Pocahontas and New River sold at \$5.50@5.75, f.o.b. Norfolk and Newport News; while on page 771 of the same issue, Pocahontas and New River run-of-mine, for local delivery (Hampton Roads), is quoted on track as \$5.50@6 per net ton; and for contract, \$3.25@3.50 per net ton. Our mines are booking orders at \$2.75@4 f.o.b. mines. First quotation \$2.75, freight to Hampton Roads \$1.45, cost at destination \$4.20.

Are there any charges for switching or handling the coal that go to make up the remainder of the price quoted; namely, \$5.50 — \$4.20 = \$1.30@1.55.

One year ago, Pocahontas and New River coal sold f.o.b. mines at \$1.10, freight, \$1.45, making cost at destination \$2.55. Do the amounts \$1.30 and \$1.55, indicated above, take the place of the remaining charge that goes to make up the price quoted; namely, \$2.80 — \$2.55 = \$0.25?

Our highest quotation on Pocahontas and New River coal f.o.b. mines is \$4, freight to Hampton Roads \$1.45, making price at destination \$5.45. There goes to make up the balance of the highest quotation for this coal, on May 12, \$7.50 — \$5.45 = \$2.05.

Am I correct in correlating the item of 25c. of a year ago with the items of \$1.30, \$1.55 and \$2.05 of Apr. 28 and May 12 respectively, 1917?

You may infer from the foregoing that I am trying to stir up another senatorial investigation, or wish to have some of our operators again indicted by the Federal Grand Jury; but such is not the case. The questions as outlined above have a very material bearing on the rate of royalty we will collect from our lessees, and I am looking for the items that go to make up the difference between the price at the mines and the price at tidewater.

SALES AGENCY.

—, W. Va.

This letter is rather hard to answer fully, particularly in the kind of market we are going through this season. In order to make a complete reply, one would almost have to inspect the books of the various New River and Pocahontas agencies. That is what the Federal Department of Justice is now doing.

In one place the correspondent says his mines are booking orders at \$2.75@4, f.o.b. mines, and farther on he asks *why* the discrepancy between his quotations at the mine (tolls added), and the "spot" quotations we have reported f.o.b. Norfolk, should at one time

be \$1.30 and at another time \$2.05. The answer to this is obvious: For exactly the same reason that his operators are able to get only \$2.75, from certain buyers at certain times, and up to \$4, from the same or other buyers at other times. If there is a range of \$1.25, f.o.b. mines, why shouldn't there be a similar range, f.o.b. Norfolk?

The net figure returned the operator, f.o.b. mine, is what remains after the selling commission or commissions are taken out. For instance, the contract price named by most of the agencies was \$3.35, gross tons f.o.b. mine (including selling commission), for the year from Apr. 1, the price that is now the subject of conspiracy proceedings. However, adding \$1.50 to the rail tolls gives \$4.85, this year's contract price, f.o.b. vessel, at Norfolk, and the basis at which the great bulk of the output was sold. It happened that the actual selling price was \$4.75, but it was made subject to an advance in tolls, which was shortly put into effect, amounting to 10c. Beyond the selling commission and tolls we know of no other charges that would go to make up the difference between the operator's return, whatever that may be, and the agency's gross price f.o.b. vessel. Apparently, Secretary Daniels does not know either! Whether as a rule the operator gets all but the usual one commission on such a basis is more than we are in position to say.

The prices we report from week to week are f.o.b. vessel, for "spot" delivery, and the tonnage disposed of at these prices goes to transient buyers, who are either not sufficiently covered by contract or have no contracts at all. Moreover, the prices quoted are what the ultimate buyer pays f.o.b. vessel. A good many of the "spot" transactions have been between sales agents themselves from heavy detention charges. If a coal factor, by reason of having spot coal on hand—that is, for prompt dumping—and by reason of an abnormal market, is able to get a price much higher than normally would be the operator's figure (plus tolls, usual commission and car demurrage, if any) then the difference must be excess profit. The price \$7.50 may include five commissions, and fat ones at that! Certainly that is common experience in a sellers' market such as we have now. On the whole, we believe that this correspondent would be warranted in "correlating the item of 25c. of a year ago" with items of this year. Now comes the Navy Department wanting 1,750,000 tons at a tentative price of \$2.33, f.o.b. mines!

Our correspondent's basis must be a new scheme in royalties. Always the royalty *used* to be on a flat rate per ton, regardless of fluctuating prices. Suppose, for instance, the railroads should be granted an advance of 25 per cent. in tolls, would it then be proper to base a royalty on a Hampton Roads selling price, enhanced for that reason alone? Or when enhanced by conditions that permit a good rugged commission? Doesn't something depend upon the kind of contract the operator has with his selling agent?

Examination Questions

Bituminous Mine Inspector's Examination, March, 1917

(Questions Answered by Request)

Ques.—In a shaft the cage weighs $2\frac{1}{2}$ tons, empty car $\frac{3}{4}$ tons, loaded car, $2\frac{1}{2}$ tons, rope 2 tons. What should be the small diameter of a conical drum, whose large diameter is 28 ft., to equalize the load on the engine?

Ans.—In this case the weight of the cage and empty car is $w_c = 2\frac{1}{2} + \frac{3}{4} = 3\frac{1}{4}$ tons; the weight of the material hoisted in a single car is $w_m = 2\frac{1}{2} - \frac{3}{4} = 1\frac{1}{4}$ tons; the weight of rope hanging in the shaft is $w_r = 2$ tons. Then, calling the smaller diameter of the conical drum d , and the larger diameter D , the ratio of these diameters is given by the formula

$$\frac{d}{D} = \frac{2w_c + w_m}{2(w_c + w_r) + w_m}$$

Substituting the given values in this formula and multiplying by the larger diameter, we have for the smaller diameter of this drum

$$d = \frac{28(2 \times 3\frac{1}{4} + 1\frac{1}{4})}{2(3\frac{1}{4} + 2) + 1\frac{1}{4}} = 18\frac{2}{3} \text{ ft.}$$

Ques.—In a lever safety valve the whole length of the lever is 30 in., the distance between the fulcrum and the valve 3 in., the diameter of the valve 2 in.; what weight must be placed at the end of the lever so as to correspond to a boiler pressure of 40 lb. per sq.in. on the valve? Also, how must the lever be divided to give pressures of 20, 30 and 40 lb. per sq.in. on the valve, using the same weight?

Ans.—The diameter of the valve being 2 in., its area is $0.7854 \times 2^2 = 3.14$ sq.in. When the steam pressure is 40 lb. per sq.in., the total upward pressure on the valve is $40 \times 3.14 = 125.6$ lb. Disregarding the weight of the lever, valve and valve stem, the moment of the upward pressure of the steam on the valve is equal to the moment of the weight acting downward at the end of the lever, 30 in. from the fulcrum. Calling this weight W , we have for the equality of moments,

$$30 W = 3 \times 125.6$$

$$W = 3/30 \times 125.6 = 12.56 \text{ lb.}$$

In order to set the same weight so as to give a steam pressure of 20 lb., it will be necessary to move that weight half the distance toward the fulcrum, which gives it a leverage of 15 in. The equality of moments is then

$$15 \times 12.56 = 3(20 \times 3.14)$$

$$188.4 = 188.4$$

To give a steam pressure of 30 lb. per sq.in. the weight must be set at $\frac{2}{3}$ the length of the lever, or $\frac{2}{3} \times 30 = 22.5$ in. from the fulcrum. In this case, the equality of moments is

$$22.5 \times 12.56 = 3(30 \times 3.14)$$

$$282.6 = 282.6$$

Ques.—A sump in a mine is 60 ft. long and 7 ft. deep, 6 ft. wide for 20 ft. and 8 ft. wide for 40 ft. and full

of water. How long will it take a 6-in. pump, having a piston speed of 100 ft. a minute, to empty this sump, assuming the efficiency of the pump to be 80 per cent.? How many horsepower will be required to empty the sump in 1 hour and 25 min., the depth of the shaft being 250 ft.?

Ans.—The area of the floor of the sump is $6 \times 20 + 8 \times 40 = 440$ sq.ft.; its cubical contents is $7 \times 440 = 3080$ cu.ft. The diameter of the pump being 6 in., or $\frac{1}{2}$ ft., the piston displacement for a speed of 100 ft. per min., is $100(0.7854 \times 0.5^2) = 19.635$. For an efficiency of 80 per cent., the discharge of this pump will be $19.635 \times 0.80 = 15.708$ cu.ft. per min. The time required to empty the sump is therefore, $3080 \div 15.708 = 196\frac{1}{3}$ min., or 3 hr. 16 min.

The theoretical horsepower required to lift 3080 cu.ft. of water up a shaft 250 ft. deep in 1 hour and 25 min., or 85 min., is

$$H = \frac{3080 \times 62.5 \times 250}{85 \times 33,000} = 17.15 \text{ hp.}$$

Ques.—The water in a pit is hauled up a shaft 400 yd. deep in two tanks, each holding 400 gal., one ascending, the other descending; what horsepower is the engine which delivers a tank of water every 3 min. at the surface, not including the time of stoppage?

Ans.—In this arrangement the weight of the empty bucket will balance that of the full bucket, and it is necessary to estimate the weight of water only. Since one bucket is hoisted every 3 min. and a gallon of water weighs $8\frac{1}{8}$ lb., ignoring friction, the horsepower required is

$$\frac{400 \times 8\frac{1}{8} \times 3 \times 400}{3 \times 33,000} = 40.4 \text{ hp.}$$

No account is taken of the weight of rope in the shaft.

Ques.—A borehole from the surface is 8 in. in diameter and enters the rib fall in a mine. A mixture consisting of 45 per cent. of marsh gas (CH_4) and 55 per cent. of air is passing up this hole with a velocity of 120 ft. per min., what is the volume of flow in cubic feet per minute, and what would be its volume if sufficient air were added to bring the mixture to the highest explosive point?

Ans.—The borehole being 8 in., or $\frac{2}{3}$ ft. in diameter, its area is $0.7854(\frac{2}{3})^2 = 0.349$ sq.ft. For a velocity of 120 ft. per min., the quantity of gas-charged air flowing through this hole is $0.349 \times 120 = 41.88$ cu.ft. per minute.

Since the mixture contains 45 per cent. of marsh gas, the quantity of gas discharged per minute is $41.88 \times 0.45 = 18.846$ cu.ft. per min. A mixture of marsh gas and air, at its most explosive point, contains 9.46 per cent. of gas. The total volume of gas and air when this mixture is brought to its most explosive point by the addition of air is, therefore, $18.846 \div 0.0946 = 199.2$ cu.ft. per min. The quantity of air that must be added to produce this result is, therefore, $199.2 - 41.88 = 157.32$ cu.ft. per minute.

	New York		Cleveland		Chicago	
	June 29, 1917	One Year Ago	June 29, 1917	One Year Ago	June 29, 1917	One Year Ago
Best grade	70.00	60.00	70.00	49.50	70.00	60.00
Commercial	40.00	30.00	24.50	18.25	25.00 to 30.00	25.00

HOSE—Following are prices of various classes of hose:

	Fire			50-Ft. Lengths 60c. per ft. 50%
	First Grade	Second Grade	Third Grade	
Underwriters' 2 1/2-in.				
Common, 2 1/2-in.				
Air				
1/4-in. per ft.	\$0.55	\$0.30	\$0.25	
Steam—Discounts from list				
First grade... 30%				
Second grade... 30-5%				
Third grade... 40-10%				

LEATHER BELTING—Present discounts from list in cities named:

	Medium Grade	Heavy Grade
Cincinnati	40%	35%
St. Louis	45%	40%
Denver	40%	45%
Birmingham	35-5%	40-5%

RAWHIDE LACING—10% off list.**PACKING**—Prices in cities named are as follows:

Valve and Stuffing-Box	Cincinnati	Denver	St. Louis	Chicago
Twisted plain, 25-lb. cartons....	\$1.35	\$1.25	\$1.25	\$0.80
Twisted graphite, 25-lb. cartons....	1.55	1.40	1.25	.90
Braided plain, 25-lb. cartons....	1.35	1.40	1.50	1.00
Braided graphite, 25-lb. cartons....	1.55	1.40	1.50	1.10
Steam (in 25- and 50-lb. cartons)				
First grade	1.00	.60	.80	.75
Second grade .....	.35			.50
Piston (in 25- and 50-lb. cartons)				
Asbestos, duck and rubber.....	.90	1.00	1.50	1.25
Flax, first grade.....	.45	.50	.60	.85
Rubber and duck.....	.75		.75	.90

MANILA ROPE—Price in coils per lb. in cities named. % to 1 1/2 in.:

	New York June 29, 1917	Los Angeles	St. Louis	Chicago	Dallas
Boston	\$0.32 1/4				\$0.31 1/4
Cincinnati .....	.30	Denver .....			.34
Kansas City .....	.31 1/2	Birmingham .....			.35
New Orleans .....	.31	St. Paul .....			.31 1/2

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York June 29, 1917	St. Louis	Chicago	Dallas
Galvanized ... 10-2 1/2 %	20-2 1/2 %	5-2 1/2 %	10-2 1/2 %	2 1/2-12 1/2-5 %
Bright ... 20-2 1/2 %	30-2 1/2 %	15-2 1/2 %	20-2 1/2 %	12 1/2-12 1/2-5 %

PIPE AND BOILER COVERING—Below are discounts and part of standard lists:

PIPE COVERING		BLOCKS AND SHEETS	
Pipe Size	Standard Thickness Per Lin. Ft.	Thickness	Price per Sq. Ft.
1-in.	1/2-in.	1/2-in.	\$0.27
2-in.	.36	1 1/2-in.	.30
6-in.	.80	2 1/2-in.	.45
4-in.	.60	3 1/2-in.	.60
8-in.	.45	3 1/2-in.	.75
10-in.	1.10	3 1/2-in.	.90
	1.30	3 1/2-in.	1.05
85% magnesia high pressure.....			
Air cells for low-pressure heating and return lines			
4-ply.....			
3-ply.....			
2-ply.....			

LINSEED OIL—These prices are per gallon:

	New York June 29, 1917	Cleveland June 29, 1917	Chicago June 29, 1917
Raw in barrels.....	\$1.21	\$0.71	\$1.28
5-gal. cans	1.31	.81	1.38

WHITE AND RED LEAD in 500-lb. lots sell as follows in cents per pound:

	Red June 29, 1917	White June 29, 1917
100-lb. keg	13.25	13.50
25- and 50-lb. kegs	13.50	13.50
12 1/2-lb. keg	13.75	14.00
1- to 5-lb. cans.....	15.25	15.50

CALCIUM CARBIDE—Price f.o.b. cars at warehouse points in Eastern States is \$82.50 per ton for Cameo, \$87.50 for Union.**COMMON BRICK**—The prices per 1000 in cargo or carload lots are as follows:

	Cincinnati	Birmingham (clay)	St. Louis, salmon	Birmingham (shale)
Cincinnati	\$13.50		7.00	8.50
St. Louis, salmon.....			8.00	
Denver				

FIRE BRICK—Price f.o.b. works:

	Cincinnati	St. Louis	Denver	Birmingham
Silica (per M)....	\$55.00-60.00	\$65.00		
Fire clay (per M)....	48.00-50.00	40.00	\$20.00-22.00	\$25.00-30.00
Magnesite (per ton)	135.00-145.00	None		
Chrome (per ton)	125.00-135.00	None		

PREPARED ROOFINGS—Standard grade rubbered surface, complete with nails and cement, costs per square as follows in New York and Chicago:

	1-Ply	2-Ply	3-Ply
No. 1 grade.....	\$1.15	\$1.30	\$1.45
No. 2 grade.....	1.00	1.15	1.25
Asbestos asphalt-saturated felt (14 lb. per square) costs \$6.50 per 100 lb.			
Slate-surfaced roofing (red and green) in rolls of 108 sq. ft. costs \$1.85 per roll in carload lots and \$2.10 for smaller quantities.			
Shingles, red and green slate finish, cost \$4.75 per square in carloads, \$5 in smaller quantities, in Philadelphia.			

ROOFING MATERIALS—Prices per ton f.o.b. New York or Chicago:

	Carload Lots	Less Than Carload Lots
Tar felt (14 lb. per square of 100 sq. ft.).....	\$59.00	\$60.00
Tar pitch (in 400-lb. bbl.).....	15.00	17.00
Asphalt pitch (in barrels).....	29.00	30.50
Asphalt felt	60.00	62.00

CORRUGATED SHEETS—Price of corrugated sheets (2 1/2-in. corrugations) in cents per pound:

Gage	Cincinnati	Birmingham	St. Louis	Denver
18-20 Black	\$18.00*		\$0.092	\$0.10
28 Black	5.75*		.094	
10 Galvanized				
18-20 Galvanized	22.50*	\$0.11		
28 Galvanized	8.75*	.12	.113	.12

*Price per square of 100 sq. ft.

HOLLOW TILE—The price per 1000 in carload lots f.o.b. mine is as follows:

	4 x 12 x 12	8 x 12 x 12
Cincinnati	\$68.80	\$129.00
St. Louis	60.00	110.00
Denver, per ton	9.00	9.00
Birmingham	52.00	97.50

LUMBER—Price of yellow pine per M in carload lots:

	1-In. Rough 10 In. x 16 Ft.	2-In. T. and G. 10 In. x 16 Ft.	8 x 8 In. x 20 Ft.
Cincinnati	\$26.00	\$28.00	\$28.00
Denver	30.50	35.00	33.00
St. Louis	35.00	35.00	37.00
Birmingham	20.00	44.00	20.00

Lumber—Price per M in carload lots:

	1-In. Rough 10 In. x 16 Ft.	2-In. T. and G. 10 In. x 16 Ft.	8 x 8 In. x 20 Ft.
Cincinnati	\$38.00	\$38.00	\$36.00
Kansas City	43.25	\$44.50	48.00
Denver		34.00	39.00
New Orleans	38.00		30.00
St. Paul		51.00	59.00

	Y.P.	Fir	Hemlock	Spruce
Cincinnati	\$36.00			\$40.00
Kansas City	38.00	\$35.00	\$35.00	42.50
Denver		40.00		36.00
New Orleans	26.00			35.00
St. Paul		40.00	31.50	32.00

COPPER WIRE—Prices in cents per foot for rubber-covered wire in standard quantities of 1000 ft.:

No.	Single Braid	Double Braid	Duplex	Single Braid	Double Braid	Duplex	Single Braid	Double Braid	Duplex
14	\$13.10	\$17.55	\$31.60	\$14.00	\$16.00	\$28.00	\$13.75	\$16.75	\$32.00
10	28.55	32.25	63.95	28.30	31.80	63.85	27.10	31.00	55.55
8	40.80	45.05	89.75	40.70	44.70	88.90	36.85	41.75	79.30
6	64.50	69.15			69.10		75.25	79.75	159.50
4	94.15	99.95			110.35		108.15	113.65	
3	143.30	150.15			161.00		161.50	168.00	
2	180.55	194.35			211.00		210.00	218.50	
0	233.75	233.75			256.50		264.50	264.50	
00					316.00		324.00	324.00	
000					385.00		398.00	398.00	
0000					463.50		486.00	486.00	

EXPLOSIVES AND ACCESSORIES**EXPLOSIVES**—Price per pound in small lots at cities named:

	Low Freezing 20%	40%	Gelatin 60%	80%	Black Powder*	Fuse†
New York		\$0.24 1/2	\$0.29 1/4			
Boston .....			.31 1/4			
Kansas City	\$0.17	.23 1/4	.28 1/4	.34 1/4		
New Orleans .....	.18 1/4	.23 1/4	.27 1/4			
Los Angeles .....	.19	.25	.31 1/4			
St. Paul .....	.17	.23 1/4	.28 1/4	.34 1/4		
St. Louis .....	.14 1/4	.20 1/2	.25 1/2	.31 3/4	\$1.85	\$5.80
Denver .....	.16	.20	.25	.33		

*Price per keg. †1000 ft.

BLASTING POWDER—Price per keg:

	Carload Lots Delivered	Less Than Car Lots
Ohio, f.o.b. Columbus.....	400 kegs	\$1.50
Indiana, f.o.b. Aetna.....	800 kegs	1.55
Indiana, f.o.b. Indianapolis.....		1.80
Illinois, f.o.b. Chicago.....	400 kegs	1.57 1/2
Iowa points on Mississippi River, f.o.b. St. Louis.....		1.80
Missouri points on Mississippi River, f.o.b. Des Moines.....		1.85
Missouri points on Mississippi River, f.o.b. Saginaw.....		1.90
Michigan, So. Peninsula only, f.o.b. Kansas City.....		1.90

Above prices are for CC, C, F, FF, FFF sizes. Price on FFFF size 5c. per keg advance over above prices.

SAFETY FUSE—Prices f.o.b. New York, Chicago, per 1000 ft., less quantity discount:

	\$6.65	Beaver	\$6.75
Cotton			
Single tape	6.85	Anchor	7.65
Double tape	7.75	Crescent	7.65
Triple tape	8.60		

BLASTING CAPS—List of price of blasing and electric blasting caps f.o.b. shipping points in states named:

	Electric Blasting Caps, Copper Wire					Blasting Caps
	No.	4 Ft.	6 Ft.	8 Ft.	10 Ft.	No. p. 1000
Ohio, Indiana, Illinois and South Michigan	6	\$6.00	\$7.00	\$8.00	\$9.00	5
	8	8.00	9.00	10.00	11.00	6
Missouri, Iowa and North Michigan	6	6.10	7.11	8.12	9.13	5
	8	8.10	9.11	10.12	10.13	6
						8

Coal and Coke News

Washington, D. C.

Revolutionary procedure, even if it be in the interest of the public and of national efficiency, rarely is carried out without some discord. In view of this well-known fact, Franklin K. Lane, the Secretary of the Interior, and members of the Committee on Coal Production, are understood not to be apprehensive over the development of plans set working at the price-fixing coal conference, which was held here last week.

When Newton D. Baker, the Secretary of War, made public his letter declaring that the maximum price of \$3 a ton is "exorbitant, unjust and oppressive," it caused the greatest surprise. The more charitable conclusions that are being drawn here are that Mr. Baker is unfamiliar with the details of the proceedings at the conference and, in the rush occasioned by the multitudinous matters demanding his attention, failed to get his premises right before drawing his conclusion. His dilatation to show that the Council of National Defense and the Committee on Coal Production have no authority to fix prices are regarded as superfluous, since this fact is admitted by all and was mentioned frequently during the course of the conference.

There is reason for stating that the utterances of Secretaries Baker and Daniels will not interfere with the original plans to put the tentative prices into effect through the voluntary cooperation of coal-mine operators.

The prevailing prices in the different coal-producing districts and the maximum prices, as tentatively arranged at the conference, are announced officially as follows:

Present prices on bituminous coal mined in Pennsylvania have ranged from \$4.75 to \$6. Under the ruling the price is reduced to \$3 for mine-run and \$3.50 for domestic lump, egg and nut.

The present range of prices in West Virginia is from \$4.50 to \$6; price reduced to \$3 for mine-run and \$3.50 for domestic lump, egg and nut.

The range of prices for Ohio coal has been from \$4.50 to \$5; prices reduced to: No. 8 district, the thick vein Hocking and Cambridge districts, \$3 for mine-run and \$3.50 for domestic lump, egg and nut; thin vein Hocking, Pomeroy, Crooksville, Coshoc-ton, Columbiana County, Tuscarawas County, Amsterdam-Bergholz district, \$3.25 for mine-run and \$3.50 for domestic lump, egg and nut; the Massillon and Palmyra districts and Jackson County, \$3.50 for all grades of coal.

The prevailing prices in Alabama have been from \$5.50 to \$5.75; prices reduced to: Cahaba and Black Creek, \$4; Pratt, Jaeger and Corona, \$3.50; Big Seam, \$3 for all grades.

The prevailing prices for coal mined in Maryland have been from \$5.75 to \$6; reduced prices will be \$3 for mine-run and \$3.50 for domestic lump, egg and nut.

The prevailing prices on coal mined in Virginia have been \$4.50 to \$5; reduced price, \$3 for mine-run and \$3.50 for lump, egg and nut.

The prevailing prices on coal mined in Kentucky have been from \$4 to \$4.50; reduced price, \$3 for mine-run and \$3.50 for domestic sizes.

The prevailing prices on coal mined in Illinois and Indiana have been from \$3.50 to \$4; reduced price, \$2.75 for mine-run and steam sizes and \$3.50 for screened domestic sizes. Add 50c. for the long-wall district of northern Illinois, Assumption and Murphysboro.

The prevailing prices on coal mined in Tennessee have been from \$4.50 to \$5; reduced price, \$3.50 for all sizes.

A further reduction of 50c. per ton was made on coal to be used by the Government.

A ruling by the conference which is expected to be even more effective, in that it will reduce coal costs to the consumer, was that fixing 25c. a ton as the maximum commission that may be charged by jobbers, regardless of the number of hands through which it may pass.

Early in the sessions it was recognized that a national organization of coal opera-

tors would be necessary to make the price-fixing plan readily operable. The idea of the national association is that it be a clearing house of the various coal-trade associations. To this end, the 25 secretaries of coal-trade associations, who were present at the conference, after a series of meetings beginning Thursday morning formed a tentative organization with C. P. White, of Cleveland, as chairman, and C. E. Leshner, of the U. S. Geological Survey, as secretary. The association is to work in conjunction with the Committee on Coal Production and is to be supported by an assessment, not to exceed 1 mill per ton, to be levied on all operating coal companies in the United States. The headquarters of the committee is to be in Washington.

The activities of the association are to be as follows:

Publicity—It is the belief of this committee that detailed current information should be collected and distributed from the secretary's office. The committee feels that such reports will be of great value to the coal producers and the general public and will be of direct benefit to the entire country in the present crisis as well as in the future conduct of the industry as a whole.

Statistics—The committee recommends the adoption of a standardized system for making reports to the national association, and urges close cooperation between the association, the Committee on Coal Production of the Council of National Defense, the Federal bureaus and commissions, in the collection of all necessary statistics and reports. It is further recommended that the National Association act as a bureau of information for member associations.

General—The committee is further of the opinion that the association would be of incalculable value in the matter of promoting uniformity in contracts with railroads, public utilities, municipalities, etc., and in the concentration of effort in appearing before state and Federal bodies on cases affecting the coal industry.

It is believed that one of the functions of the National Association should be the promotion of harmonious feeling and conduct among the member associations. It is further believed that all of the recommendations made by the committee are entirely within the law and in line with the desire for cooperation expressed by the Secretary of the Interior, by the Federal Trade Commission, and the Committee on Coal Production of the Council of National Defense. The carrying into effect of the above purposes means the greater preservation of life among the men employed in and around the coal mines, and the conservation of the fuel resources of the country.

While the hostility that has been evinced by the Secretary of War and the Secretary of the Navy to the constructive work done at the price-fixing conference is going to add decidedly to the difficulties of putting the sweeping reductions of coal prices into effect, the intention of the committee on coal production to see that the wish of the conference is carried out is evidenced by the fact that it is telegraphing all associations, whether of operators, wholesalers or retailers, urging them to report any violations of the price-fixing agreement.

The coal producers came to Washington in a markedly receptive frame of mind. Before they had been in session an hour, they had given indisputable proof that it is patriotism, rather than profit, that is actuating them. When Secretary Lane called upon them in the interest of the country, to reduce the price of coal and pointed out graphically the important part the operators are playing in this war, enthusiasm such as rarely is shown by men so conservative was witnessed. In fact, every session of the conference brought out clearly the unselfishness of the coal producers. This feeling persisted despite the damper thrown on the proceedings by apparent lack of cordiality on the part of the Department of Justice and by the fact that Gov. John F. Fort showed a tendency toward vacillation on Wednesday, after having aroused such a friendly feeling toward the Federal Trade Commission Tuesday that the operators were ready to forget that many of his statements were at right angles with the recommendations

of the Federal Trade Commission to Congress.

"The coal producers," said George Otis Smith, director of the U. S. Geological Survey, "have blazed a way for cooperative effort between representatives of industries and representatives of the Government looking to unity in effectual public service. The maximum prices fixed at the conference mean a saving to the American consumer of no less than \$100,000,000 for the remaining six months of 1917. Based on the percentage of spot coal in the different states and the average difference between last week's prices, as published by 'Coal Age,' amended by reports of actual sales," as stated by operators present, and on the Survey's estimates of May production, it can be calculated that the reduction in price by the operators would have amounted to \$15,000,000 had the agreement been in effect during the month of May. There was a larger gain to the consumer in view of the fact that the stabilization of prices is assured. The small consumer now knows on Government authority the price paid for coal at the mine.

This conference can be regarded as the fair measure of the coal industry's cooperation at this time of national need. Another conclusion that can be drawn from the conference is that a real leader has arisen among the coal producers in the person of Francis S. Peabody."

* Cannel coal is "coming back," says George H. Ashley, of the United States Geological Survey, who has just completed a special investigation of this class of coal. Cannel coal was much in demand in the United States between 1855 and 1860, when it was the principal source of the oil supply. Mr. Ashley's investigation shows that there were sixty distilleries in operation in the United States in 1860, when the discovery of large reservoirs of petroleum put an end to the "coal-oil industry."

The increasing demand for the lighter hydrocarbons for use in portable motors as well as the demand for the byproduct chemicals easily obtainable from the destructive distillation of cannel coal, is causing wide-spread attention to this mineral, which is one of the richest of known substances in hydrocarbon content.

"No gain in production would result from increasing the hours of labor in the anthracite mines. If greater production is to be obtained, it would seem that some other method than increasing the number of hours per day must be devised." This is the deduction of the Department of Labor from figures recently gathered by that department. By comparing the production in 1915, when the nine-hour work day was in effect, with that of 1916, under the eight-hour day, the Department finds that an increase of 1.4 per cent in the production per man-day resulted in 1916.

HARRISBURG, PENN.

The Legislature of Pennsylvania has gone into history, without even recognizing officially the mine-cave menace in the anthracite region nor having passed any measure pertaining to coal mining. The general assembly adjourned sine die on June 28, without reference to any resolution, statement or other legislation to solve the problem besetting the hard-coal fields.

During the session there were several important bills introduced by the state administration, the mine workers being more interested in compensation amendments, while the operators were busy keeping track of such amendments and boosting the repeal of the full crew.

It was expected that the Senate and House might pass a concurrent resolution to investigate conditions in the hard-coal fields, but during the closing days of the session, those who had been following the work of the Senate were not surprised that one was not passed, as the sentiment was changing rapidly when a strong lobby from the bituminous region appeared to protect the interests of that section, which would be affected if the Scarlet bill went through. The Governor had stated he would sign this bill if it reached his desk.

One reason why the resolution for a state commission was not presented was

that the people of the anthracite region had made bitter attacks on the Senate for its action in not hurrying mine legislation.

Senate leaders declared they were doing the best thing they consistently could, but before any recommendations were made, a great hullabaloo arose, criticism was directed at them for political and personal reasons, and it was decided that no resolution should be presented.

This action was taken, they explain, not in the spirit of spite but that in the knowledge that nothing they could do would be regarded as satisfactory or adequate, unless it affected the bituminous region also, where conditions are much different than in the anthracite field.

The mine-cave situation today is exactly what it was before the session was organized, with one exception. That is that the larger coal companies have made a voluntary offer taking the place of legislation, to satisfy the poor man, whose home may be wrecked by surface subsidence, since the greater argument from the standpoint of the property owner was that the greed of the corporations were adding profits to the stockholders at the expense of many men in moderate means—at the expense of men who were paying off mortgages upon their homes, and whose life's savings were destroyed to make profit for the corporations. This sentiment is met by the larger coal companies offering to repair at 100 per cent. damage done to any property under \$5000 in value, and to sell the coal under properties over this value.

It is understood that the smaller coal companies are preparing to join the larger ones in this offer, and meet the argument of the people, that it is not the large operator that is doing the damage, but the small independent fellow.

The Woodward bill, which provided for about fifty amendments to the workmen's compensation act of 1915, failed to pass. This bill held the center of the stage on more than one occasion, as united labor throughout the state was determined that this should pass. After many attempts to place it on special order calendars, it was finally dropped from the calendar on June 27 to give way to Senate bills.

The full-crew bill was passed by both Senate and House and is on the Governor's desk for approval. This bill shared the stage with the Woodward bill, as the labor people were making strenuous efforts to hold this back so as not to come up for third reading vote, and were pushing the Woodward bill for a vote, but failed in both attempts.

House Bill No. 599, known as the anthracite mine code, was withdrawn from the House, as it was stated that should the bill become a law at this time, there were many points in the proposed act that would have to be determined by the courts, and might cause long delays in mining, and interfere with "full production," which the operators are so earnestly attempting as their "bit."

The Powell bill, which provided for first-aid corps in every mine employing 50 or more men, was advanced several readings and returned to committee to be reported out in case a bill said to be prepared in the interest of certain large insurance companies would make its appearance in the legislature. This latter measure would place the cost of maintaining first-aid and rescue corps, etc., on the state, while the Powell bill placed it on the coal companies.

House Bill No. 688, which pertained to oil and gas wells through the coal measures died in committee, as neither the coal operators nor gas and oil people seemed to agree on what they wanted and made a hard fight to keep this bill in committee despite the efforts of the state Department of Mines to have it brought to the floor of the House for an open debate.

House Bill No. 1491, which provided that all electrical apparatus should be incased after January, 1919, met a similar death.

Lack of a constitutional majority defeated the Baldwin bill, which would have perpetuated in office all mine inspectors in the anthracite regions. The bill was opposed by Senator Burke for the United Mine Workers, because it would have the effect of keeping perpetually in office, without necessity for reelection, any anthracite mine inspector who shall have passed two examinations.

The mine workers stated that they would not oppose any measure which provided for exemption from further examinations if they were successful in passing one or two such tests, but insist that the inspectors should be candidates for reelection every four years. It was thought that the bill would pass both Houses, as Governor Brumbaugh had stated numerous times that it was an injustice that mine inspectors should be compelled to stand an examina-

tion every four years and then run chances of election.

Two bills succeeded in passing both Houses during the closing hours of the session. One provided that the sealers of weights and measures of any municipality shall have the authority to examine and test the scales at any coal mine in the state. The other provided for motor ambulances in the hard-coal fields, but this bill was so amended that if it becomes a law it will take the best legal talent in the country to untangle the meaning of some of the amendments.

The coal operators succeeded in getting through some legislation pertaining to townships and boroughs where they claim they have been paying enormous sums of money in taxes, the new legislation will curb a great deal of this.

All bills providing for a tax on anthracite and bituminous coal failed to pass the Senate, also the bills providing for a bureau to regulate the sale of coal in the state and for the state to operate its own mines.

On the closing day of the session the name of James E. Roderick was confirmed as chief of the Department of Mines, also the names of John A. Scott and Clarence A. Mackey as members of the Workmen's Compensation Board. James A. Leech, the third member of this board, failed to receive the constitutional majority and will therefore be dropped from the Board. John Price Jackson was confirmed as commissioner of the Department of Labor and Industry. Mr. Jackson had the support of the labor people, headed by the United Mine Workers.

The report of the Lake Erie and Ohio River Canal Board was filed during the week with Governor Martin G. Brumbaugh by Secretary B. S. Patterson. It finds that the canal is feasible; that it will pay eventually, if not immediately, and that it is likely in the not distant future, if constructed, to be taken over by the United States Government and made free.

The report is signed by six members of the board, and after declaring the canal feasible and pointing out the proper route, it says the canal should be not less than 12 ft. in depth and should have locks 56 ft. in width by 400 ft. in length. The cost of the canal is estimated at \$65,000,000 and its capacity 38,000,000 tons per annum. It will connect the largest two inland waterways in the United States. It will carry iron ore, coal and other heavy material at 50 per cent. of present cost. It will connect the iron fields of Minnesota with the Pennsylvania and other coal fields and the Lake ports with the ports of the Atlantic.

PENNSYLVANIA

Anthracite

Edwardsville—Cutting and loading 10 cars of coal, John Dood, a miner employed by the Kingston Coal Co., on June 25, established what is claimed to be a new record in the anthracite region. The feat was performed by Mr. Dood as a result of a wager made with his laborer.

Tamaqua—The East Lehigh Colliery near here which has been extensively overhauled and rebuilt will be completely electrified at a cost estimated to be about \$40,000.

Bituminous

Luzerne—The Superior Connellsville Coal and Coke Co., a new corporation composed of George F. Hoover, T. H. Lackey and others, on June 25 purchased 100 acres of Connellsville coal in Fayette County. The price of the coal together with the mining equipment was \$300,000. Mr. Hoover also purchased 50 acres of the 5-ft. bed of coal, paying \$10,000.

Congressman Bruce F. Stirling heads a new concern known as the Georges Creek Coal Company, which announced recently the purchase of 70 acres of coal in Georges township, for \$100,000.

Pittsburgh—The city council has received a proposition from E. N. Jones to lease the coal fields at Mayview, offering to furnish coal to the city at \$1.15 a ton and pay a royalty on coal sold for private use besides. Mr. Jones advised the council that immediate development would allow shipment of coal to be made in three months.

WEST VIRGINIA

Logan—Lightning recently struck the tipple of the Black Hawk Mining Co., at Big Creek. The structure took fire and considerable damage was done.

Welch—Four thousand tons per day is the capacity planned for the additional mine of the Solvay Collieries Co. at this place. The new development will be known as the Exeter Colliery, and the main shaft

will have four compartments, two working from the Pocahontas No. 3 bed and two from the Pocahontas No. 4. The acreage available is 1700 for each seam.

Grafton—Considerable activity is shown by the Simpson Creek Coal Co. at the new works near Astor. A railroad 2½ miles in length is being built from Flemington to the Barbour County line, where the mine is opened and a new town is being built. The new mine will be one of the largest in the region and in a field which has heretofore been untouched. It is estimated that one million dollars will be spent before shipments can be made.

Fairmont—Many of the coal companies in this region that formerly drove their machinery by steam are converting this into electrically driven equipment. The Monongahela Valley Traction Co. is furnishing the power to many of these mines.

The Consolidation Coal Co. is rebuilding and remodeling Traction Park, which is owned by the Monongahela Valley Traction Co. The Traction company still retains the ownership, but the park has been in charge of the Consolidation company for some time. The coal company will spend at least \$4000 in rebuilding the baseball grounds and other parts of the park.

OHIO

Bellaire—The Coal Ridge Coal Co., which was organized some time ago, largely with local capital, is about ready to mine coal. Lands have been acquired near Cambridge and at other points. The stripping process will be employed by this company.

Rehoboth—Deputy Mine Inspectors Milgate and Sagle have completed the work of sealing up the mine of H. F. Teal at this point. They expect the fire which originated from some unknown cause will be smothered within a few weeks so that work may be resumed.

St. Clairsville—Practically all the coal mines in this vicinity are now working less than usual. This is attributed to the car situation and operators have been told by railroad officials that this situation is serious and they will not make any promises concerning the transportation of coal. During the past few weeks a considerable number of miners have given up their vocation and obtained work elsewhere.

Maynard—An underground substation is being installed at the Lydia mine of the Pursglove-Maher Coal Co. This is the first instance of such a substation in the local field. The company gets its current from the Sunnyside Electric Co., but because of the distance of some of the workings from the point of supply the full voltage was not obtainable. Hence it was decided to carry the high tension line into the mine where the substation is being built.

Martins Ferry—To take advantage of the high price of coal, the Youghiogheny & Ohio Coal Co. will build soon a four-mile railroad to open 8000 acres of coal land in Jefferson County. The spur will be built from the Pennsylvania line.

Athens—Operators in this vicinity are working out a plan under which domestic consumers will have first call on the available coal supply, large industrial consumers being placed last. It is pointed out, however, that if the mines are to produce the coal needed, miners must be exempted from army service, as there is already a shortage of labor.

Columbus—Ohio operators have virtually agreed to a maximum price of \$3 per ton of 2000 lb. f.o.b. mines for their coal, following a prolonged conference with Governor Cox. This agreement is made with the understanding that the state will do everything in its power to facilitate shipments, and to see that the mines are supplied with cars.

INDIANA

Bloomington—Officials of the State University here have been consulted at the direction of Gov. Goodrich on the proposal of the state administration to purchase mines so that the 25 state institutions may be supplied with coal. It is the purpose of the administration to provide for working the mines with prison labor.

ILLINOIS

Marion—The Big Muddy Fuel Co., being operated by the Peabody Coal Co. near here, has sold its mine and holdings to the Public Service Corporation of Chicago, which is controlled by the Commonwealth Edison Co. The mine was taken over July 1, and the Peabody Coal Co. will operate it.

Duquoin—Definite announcement has been made that practically the entire output of the three largest mines in this field has been sold for the next 90 days to the Illinois Central R.R. These mines are the

Majestic, the Security and the Paradise. Practically all of this tonnage under normal conditions has been sent to the retail trade.

Girard—Miners of this vicinity have organized the Girard Cooperative Society and will start a store in the near future. Charles D. Edwards has been elected secretary and Walter Shepard treasurer.

Staunton—The first town in the United States to be named after President Wilson will be Wilson, Ill., 7 miles from here, and will be incorporated shortly. The Superior Coal Co. is sinking a mine at Wilson, which when in operation, it is said, will be the largest coal mine in the world, and will employ about 2000 miners. The thickness of the bed in and around the new shaft is greater than in the rest of the field. Thirty days ago Wilson was nothing but farm lands. Within 24 hours after the announcement of the company's plan was made a new hotel and 30 houses were in the course of construction. Wilson is 7 mi. from the Chicago & Northwestern, which is building a branch there. Trains will be running within the next three weeks.

Herrin—The St. Louis-Carterville Coal Co. has sold its mine and several hundred acres of coal land here, located on the Iron Mt. for \$165,000 to the Crerar-Clinch Co., of St. Louis and Chicago, which it is understood, has bought it for other parties.

OKLAHOMA

Tulsa—Much attention is now being given to the coal beds that underlie much of Tulsa, Washington, Rogers and Wagoner Counties, and companies are being organized and extensive leases secured with a view to developing these measures in the near future. The fast-disappearing supply of natural gas in the Mid-Continent oil fields is the contributing cause, and many large oil companies are now securing large leases of coal lands and otherwise preparing to divert their activities to coal mining. Two beds of coal have been encountered in this area by drillers in boring oil wells. The first is but a few feet below the surface in most places and can be mined by stripping operations. The second is about 300 ft. down. The deeper bed is from 4 to 10 ft. in thickness and is of an excellent quality.

Personals

Lewis Moninger, superintendent of Pauline mines, near Bannock, Ohio, owned and operated by the Progress Coal Co., has tendered his resignation. His successor has not yet been named.

Robert Lee Jenkins, of Carbondale, W. Va., has been appointed mine inspector in the 15th district succeeding J. Kenna Gentry, who resigned to take a position with a coal company. The 15th district is composed of parts of Logan and Lincoln Counties.

Paul T. Norton, Jr., who recently came to the United Coal Corporation at Pittsburgh as transitman on the Pittsburgh division corps, has been promoted to the position of division engineer of the mines in Somerset County, including the Merchants Coal Corporation in that county and at Tunnelton, W. Va. His headquarters will be at Boswell, Somerset County, Penn.

H. C. Boardman, general manager of the Tidewater Coal Co., at Vivian, W. Va., has donated to the patients in the public wards of the hospital at Welch, a shipment of ice cream, which will be sent weekly during the remainder of July and August. A similar donation was made last summer, and 75 to 80 patients in the public wards benefited by Mr. Boardman's generosity.

Lawson Blankinsopp, who has been located in the Pocahontas coal field for several years as mine inspector for the 12th district, with headquarters at Landgraaf, W. Va., has resigned his position and gone to Prestonburg, Ky., where he will be resident manager of a coal corporation which he and several associates from McDowell County are now developing and putting into operation.

Frank H. Crockard, vice president of the Tennessee Coal, Iron and Railroad Co. since 1906, recently tendered his resignation effective July 1 to accept the presidency of the Nova Scotia Steel and Coal Co., with extensive steel mills, ore and coal mine developments in Nova Scotia.

Mr. Crockard will be succeeded as vice president of the Tennessee Co. by H. C. Ryding, who has served as his assistant for the past ten years, and is eminently fitted to assume the duties laid down by Mr. Crockard.

Obituary

Thomas M. Whilden, aged 70 years, for many years general inside superintendent for the Lehigh Coal and Navigation Co. in the Panther Creek Valley, died at his home in Lasford on June 25.

Horace Leete Chapman, one of the best known operators in Ohio, died at his late residence at 1117 East Broad St., Columbus, Ohio, June 28 from a complication of diseases due to old age. He was nearing his 80th birthday. Efforts to cure the disease were made by taking him to Battle Creek, Mich., but he was brought home several days before his death, which was known to be certainly near. Mr. Chapman was born in Allegheny County, N. Y., July 10, 1837. His parents removed to Portsmouth, Ohio, when he was 17 years of age. He became interested in the lumber business at that place and became a partner in a retail lumber business. In 1865 he removed to Jackson, O., and took a prominent part in the development of that coal field. Within a few years he was the leading operator in that section. He lived in Jackson up to 25 years ago, when he removed to Columbus. He was also prominent in other lines of business and at the time of his death was president of the Dunlap Manufacturing Co. He leaves a widow, a son and a daughter. The funeral services were held at his late residence June 30 and interment was made at Green Lawn cemetery.

Industrial News

Philadelphia, Penn.—The steamship "Tidewater," which was only recently launched, has been sold to the Italian Government for \$2,600,000, which is almost five times the cost price. The boat was built at Camden, N. J., and has a carrying capacity of 8700 tons.

Toledo, Ohio—The Toledo docks of the Hocking Valley Ry. have been busy for weeks loading a large tonnage for lake shipment. During the week ending June 29, the docks loaded approximately 126,000 tons as compared with 123,000 tons the previous week. Since the opening of navigation the docks have handled 1,181,000 tons.

Columbus, Ohio—The Ohio Public Utilities Commission has suspended for a period of 30 days the proposed increase of coal freight rates of 15 cents on the ton in Ohio. The new rate schedules filed by the railroad provided that the new rate take effect July 1. The suspension was made to permit the commission to make a more thorough investigation of the matter.

Louisville, Ky.—At a sitting of the Kentucky Railroad Commission in Louisville recently the Illinois Central R.R. filed an answer to the complaint of the Clinton Water and Light Co., of Clinton, Ky., complaining that the railroad was not supplying it with sufficient coal. The response was that the railway furnished the mines which had the contract with a fair percentage of coal cars but that the railway did not control the shipments from the mines.

Nashville, Tenn.—John S. Denton, chairman of the Board of Control of state institutions of Tennessee, reporting on the short supply of coal cars, stated that during 25 days in June the state mines had received 248 cars when they were entitled to receive 420, a shortage of 172 cars. During the same period 88 coke cars, when there should have been 126, were provided. The state authorities are making the complaint that the railroads are showing favoritism to various mining operations.

Columbus, Ohio—The Ohio state public utilities commission will cooperate with Governor Cox and Attorney General McGhee in their efforts to force down the price of coal. The commission has ordered railroads, beginning July 1, to make daily reports of the number of cars asked for at the mines and the number furnished. They are also ordered to report the cars in transit and at the yards, loaded and unloaded, and give reasons for delay in loading, shipment and unloading. James B. Dugan of Kenton, new chief railway inspector, will be in charge of this work.

Boston, Mass.—The city of Boston is experiencing great difficulty in securing bids on its requirements of about 100,000 tons of soft coal, as not a single bid was received up to the day set for the opening of the bids. Several weeks ago local dealers agreed to furnish the 100,000 tons at \$15 per ton, but Mayor Curley refused the

figure as exorbitant. He is now making arrangements for a supply with the Massachusetts Public Safety Committee, which body has under consideration the purchase of a large quantity of coal for the state, cities, towns and the public.

Columbus, Ohio—There is a wide difference of opinion between Columbus railroad officials and coal operators over the method of fixing the proposed zone system of coal transportation. The Washington suggestion is that each coal-consuming district draw its supply from its immediate vicinity. Railroad men favor this plan, saying it would obviate the waste entailed by sending empty cars over long distances. Coal men say the plan is not a good one for Ohio, because the state does not produce coal enough for its own use, and has to draw upon other states for a supply. They say other states have had a sort of zone system in effect and have been supplying their own industries first, which has been to the detriment of those of Ohio.

Seranton, Penn.—No coal company in this city, wholesale or retail, will submit a bid to the Government for the delivery in October of 225 tons of coal to the federal building. Every company that has been asked to give the Government a figure on future delivery has refused the offer, the wholesalers answering that they are not in the retail business, the retailer refusing to give a price now on coal to be delivered in the fall. The closest approximation of a bid came from the Consumers company, which said that it will deliver the coal when wanted at the then prevailing market price, plus cost of teaming. As to what the price will be the Consumers company will not say. The unusual situation of coal companies refusing to negotiate a contract with the Federal Government has aroused much uncomplimentary comment on the companies and the entire matter has been forwarded to the authorities in Washington.

Oklahoma City, Okla.—With a view to securing modification of rules adopted by the Corporation Commission of the State of Oklahoma to govern the handling of loaded and unloaded coal cars, a delegation of coal operators and miners from Henryetta, Okla., recently appeared before the Commission at Oklahoma City. The delegation was headed by W. E. Welch, a member of the National Council of Defense, who is also superintendent of the Fort Smith & Western Ry. The other members were: James Cameron, D. J. Jordan and John Wilkinson, president of District 21, United Mine Workers. The committee asked that the free time on loaded coal cars be reduced from 72 to 48 hrs., in order to speed up the unloading of cars at destination. Mr. Welch told the commission that in most cases shippers are doing all they can to facilitate the transportation of coal, but that regulations are needed to reach the few recalcitrant shippers.

Philadelphia, Penn.—What virtually amounts to a proposition that the Pennsylvania R.R. will buy about 6,000,000 tons of coal at \$2.85 per gross ton at the mine is about to be laid before operators of mines in Pennsylvania R.R. territory as the result of a conference held on June 28. About 75 producers and shippers along the Pennsylvania system met in the Bellevue Stratford on June 28, for the sole purpose of taking concerted action against the method of placing cars at the mines. According to the statements of these operators, it has been the custom of the railroads to place cars during the last three days of each week for its own coal supply only. It was said that the operators had become convinced that refusal to load on the last three days of each week was impracticable, and that in the interests of getting a car supply for the first three days they have been loading for the railroad at prices set by the railroad officials. These prices, it was said, were as much as \$2.50 a ton below the market.

St. Louis, Mo.—Secretary Redfield of the Department of Commerce, in a letter to the St. Louis Chamber of Commerce, strongly urges the organization of companies to build boats and barges and conduct transportation on the Mississippi River. The railroads, he says, are called upon to carry from 15 to 25 per cent. more freight than their capacity and the condition is becoming worse. River traffic on a large scale is the only way to relieve the situation. He points out that barges could be built at many points along the river and launched without the accumulation of expensive machinery and tonnage capacity can be increased much more rapidly by the construction of barges than by the construction of cars. Word has been received here that at a meeting a few days ago in New Orleans steps were taken to organize a barge line between that city and St. Louis. At Memphis the Memphis Barge Line Co. has been organized to operate barges between that city and St. Louis. The company has chartered 12 steel barges and 3 towboats.

Market Department

GENERAL REVIEW

Aggressive action of Federal Trade Commission creates improved sentiment among buyers. Bituminous marking time pending news from Washington. Purchases being made with prices to be fixed later. Price limitation not regarded seriously in Middle West.

Anthracite—The aggressive action of the Federal Trade Commission in the matter of anthracite prices is creating a general feeling that there is little likelihood of excessive prices being permitted. The current month is regarded as the crucial point in the trade; the assurances of plentiful shipments last month were not made good, and if this proves to be the case the current month also, the trade will go into the winter business with meagre stocks. The more confident attitude in the bituminous trade as a result of the Governmental investigation is reflected in the anthracite steam sizes and some of these are even going into storage.

Bituminous—The market has been completely upset by the exciting happenings in Washington when Secretary Baker unexpectedly repudiated the maximum price arranged at the conference of the operators last week. The entire situation now hinges entirely on the future action of the Government and in the meantime the trade is marking time pending further developments. Buying has practically ceased, while receipts at tidewater are increasing and the average detention at Hampton Roads has been substantially reduced. The fact that contracts were exempted from the price limitation arrangement will undoubtedly be a factor in increasing deliveries on these, even though the controversy over the maximum price continues. Another factor in the situation that may be of considerable importance is the diverting of a great many orders to bituminous companies because of the scarcity of anthracite.

Lake Trade—Prospective buyers see tangible evidence of relief from the ruling high prices in spite of the fact that the recent maximum figure fixed at Washington has been repudiated and are showing a marked tendency to stay out of the market for the time being at least. For the present a great deal of buying is being done with the understanding that prices will be fixed later, contingent upon what future action the Government may take. Under any circumstances it must be remembered that price limitation will not eliminate the shortage in any event; scarcity of cars and labor are still to be met and a reduction in prices, making it necessary for the operators to restrict the many bonuses they are now granting their employees, may prove a serious factor in the labor situation, which is already a grave problem.

Middle West—There has been a very sharp falling off in orders with some cancellations, especially from retailers, but the movement still continues up to the maximum. Domestic consumers see definite prospects of much lower prices so they are refusing to meet the ruling high level. Should the maximum price fixed at Washington last week be finally accepted it is not expected that it will have any material influence on the Middle Western situation in any event. The appearance of some very heavy buying for Canadian railroads has also been a factor in the current market this week. Eastern coals seem to be definitely eliminated from these markets, not only because of the new restrictions in shipments according to zones, but also because of the wide differential in prices as compared with the Western grades. With the general demand practically gone for the time being at least, the market is being maintained very largely by the heavy railroad consumption. The market is rather nervous for the time being, but is expected to recover its previous strength very shortly.

A Year Ago—Anthracite less active but still firm. Labor and car shortages restrict bituminous output and market steady. Pittsburgh district output about normal. Tendency towards higher price levels in the Middle West.

Comparative Average Coal Prices

The following table gives the range of mine prices in car lots per gross ton (except where otherwise noted) on 12 representative bituminous coals over the past several weeks and the average price of the whole group for each week:

	Year Ago	July 7	June 30		Gross Averages ^a	
Boston					1917	1916
Clearfields	\$1.10@1.60	\$3.50@4.75	\$5.25@6.00	Feb. 24	4.95@5.29	1.64@1.84
Cambrias and Somerset	1.35@1.75	3.75@5.00	5.50@6.25	Mar. 3	5.10@5.48	1.56@1.74
Pocah. and New River ¹	2.80@2.90	4.85@5.25	6.25@6.50	Mar. 10	5.36@5.61	1.53@1.68
Philadelphia				Mar. 17	4.80@5.19	1.46@1.65
Georges Creek (Big Vein)	1.90@2.00	6.00@6.25	6.00@6.25	Mar. 24	4.64@4.94	1.49@1.66
W. Va. Freeport	1.15@1.25	5.25@5.50	5.25@5.50	Mar. 31	4.20@4.44	1.46@1.61
Fairmont Gas mine-run	1.40@1.50	5.50@5.75	5.50@5.75	Apr. 7	4.07@4.36	1.44@1.60
Pittsburgh (steam coal) ²				Apr. 14	4.01@4.35	1.45@1.61
Mine-run	* 1.30@1.40	3.00@3.25	4.75@5.00	Apr. 21	3.83@4.14	1.46@1.62
3-in.	* 1.40@1.50	3.00@3.25	4.75@5.00	Apr. 28	3.81@4.12	1.45@1.62
Slack	* .90@1.00	3.00@3.25	4.95@5.05	May 5	4.04@4.40	1.45@1.59
Chicago (Williamson and Franklin Co.) ³				May 12	4.64@4.98	1.44@1.59
Lump	1.55@1.65	3.25@3.75	3.50@3.75	May 19	5.08@5.54	1.42@1.56
Mine-run	1.20@1.30	2.75@3.25	3.00@3.50	May 26	5.10@5.58	1.41@1.55
Screenings	.90@1.00	2.75@3.00	2.75@3.25	June 2	5.00@5.46	1.47@1.63
				June 9	4.80@5.24	1.52@1.72
				June 16	4.77@5.23	1.50@1.66
				June 23	4.81@5.15	1.51@1.67
Gross average ³	\$1.41@1.57	\$3.88@4.35	\$4.79@5.15			

¹ F. o. b. Norfolk and Newport News. ² Per net ton. ³ The highest average price made last year was \$4.80@5.33 made on Nov. 25. * Price lower than the week before. † Price higher than previous week.

GOVERNMENT MAXIMUM PRICES ON ANTHRACITE

The following are maximum prices on anthracite fixed by the Federal Trade Commission. The maximum for egg, stove, nut and pea may be considered a fair indication of the maximum mine prices of individual operators for sales to retailers involving domestic supply. For industrial business, prices on egg and pea may vary to some extent from the prices indicated:

	White Ash	Red Ash
Egg	\$4.70@5.00	\$5.20@5.50
Stove	4.95@5.25	5.45@5.75
Chestnut	5.05@5.35	5.55@5.85
Pea	4.25@5.25	4.50@4.80

Gross Selling Price—"Gross selling price" means the price at the breaker without deduction for selling expense, commissions to sales agents or coal sales companies, allowances or rebates or claims of any character, demurrage, storage expense, short weights, etc., and if coal is sold delivered only the net freight or other net transportation charges are to be deducted.

BUSINESS OPINIONS

Bradstreet—Sentiment regarding trade is more cheerful, cereal crop news is much better, prices for numerous foodstuffs are lower, governmental buying continues to broaden, manufacturing is only restricted by lack of labor or supplies of raw materials, jobbing trade, helped slightly by reorders, reflects improvement in final distribution, caused by seasonable weather, and finally buying for fall account has perked up a little. On the whole, trade is better than last year, when distribution was heavy, and the half year's trade total makes a new record at large markets.

Dun—The half-year ends with various uncertainties in evidence, and with many economic problems still to be met and further changes effected. Yet the absence of conspicuous unsettlement during the present period of readjustment, with failures relatively moderate, has demonstrated that business and finance rest on a solid basis, and confidence remains the predominating sentiment. Commercial failures this week are 272, against 285 last week, 277 the preceding week and 256 the corresponding week last year.

Marshall Field & Co.—Wholesale distribution of dry goods for the current week has been considerably in excess of the corresponding period of a year ago. Road sales for both immediate and future shipments have surpassed the volume of a year ago by a good margin. Customers have visited the market in slightly smaller numbers. Collections are good. The market on domestic cotton goods is firm.

Dry Goods Economist—With unfavorable crop reports, cotton took another jump this week. It is obvious that the demand for cotton will be increased by our government's war needs. The situation in England is reflected in the report that the British government will establish a board,

representing all the interests in the country's cotton industry, for the control of raw material supplies. The early reopening of the Liverpool Cotton Exchange has been announced.

American Wool and Cotton Reporter—Comparatively little business was done in the wool market for the week under review. The trade in general is marking time on account of the Government control of noils and waste. There is little, if any, speculation and increases in price are based on fundamental conditions. In the West conditions are still very excited. In the cotton market the condition report was the feature of the week, as 70.3 was higher than private reports have estimated, but the lowest recorded in any year for the end of June.

Current Events

Transportation Notes—The recent advance in freight rates from 55 to 70c. per ton from mines in Pike and Warrick Counties, in Indiana, to New Albany, Ind., has been suspended pending a further investigation.

The Ohio Public Utilities Commission has suspended for thirty days the proposed increase of 15c. a ton in Ohio, which was to become effective July 1.

Fuel Shortage Items—At a conference of some 400 bituminous-coal operators in Washington, which ended on June 28, it was unanimously agreed to fix the maximum price of \$3 per ton for bituminous coal at the mine. Profit of jobbers was to be limited to 25c. per ton. These prices were not to apply on existing contracts or in the export trade, though some Government action on this latter is expected shortly. On June 29 Secretary of War Baker issued a statement repudiating any confirmation from Government sources of the maximum \$3 price fixed at the conference. Mr. Baker said: "From information I have I think the \$3 price suggested or agreed on as a maximum is exorbitant, unjust and oppressive." The figure fixed having been approved by Secretary Lane a threatened controversy in the Cabinet was only avoided when President Wilson took over the matter on July 2. President Wilson's position is not known at present, though it is believed that he takes the view of Secretaries Baker and Daniels that the \$3 maximum is excessive. The matter has been the cause of considerable tension throughout Government circles.

Legal—In the case of the West Virginia coal operators indicted for violation of the Sherman Anti-Trust Law, a letter from John A. Renahan, President of the Algonquin Coal Co. and Vice President and General Manager of the Pocahontas Coal Sales Co., dated Dec. 6, 1915, was introduced in testimony in which Mr. Renahan stated "that from 1910 to the present time the

association, even as a rope of sand has piled up to date \$18,000,000 more money in the smokeless field than if they had been in a chaotic condition." W. R. J. Zimmerman, Secretary of the Association, testified that at the Waldorf meeting in January the operators did not take a vote on what price would be charged for coal. On June 29 the so-called London Agreement was read to the jury, this providing a penalty in case bunker coal was sold at a cheaper price than agreed upon. The operators opened their side of the case on July 2, spending most of the day arguing that the indictments be dismissed. An interesting development of the testimony on that day was the statement by President Burrows, of Castner, Curran & Bullitt Co., that the Government had bought coal through the Panama Railroad at \$3 a ton and sold it at Panama at \$8 a ton.

Labor—A strike affecting about 12,000 miners in five counties in Kentucky was called for July 3. The union leaders declared that 9000 men responded to the call, though the operators placed the number at much less.

Ocean Shipping—On June 30 President Wilson signed an executive order, authorizing the Shipping Board to take "possession and title" to 87 German owned vessels, representing over a half a million gross tons, which were interned in American ports. The order does not affect the 14 German vessels already taken over by the Navy Department, which raises the total tonnage of German vessels seized to about 650,000.

Exports—President Wilson on June 27 signed a proclamation by which exports will be limited by means of licenses. This will also apply to bunker coal, it being the intention of the Government to force ships into necessary trades and draw out other vessels from neutral and Allied harbors.

Prices—The agreement last week at Washington between the 400 coal operators and Government officials on maximum price of \$3 has naturally caused a violent decline in quotations in the spot market, even though the agreement was later repudiated. Our gross average price for the week declined to the lowest point recorded since last Fall, with the exception of two weeks during the latter part of April, which were a few cents lower. The decline is naturally confined to those points where the maximum price of \$3 has been accepted, but it is a question at this writing how much business is being done on that basis.

Atlantic Seaboard

BOSTON

Buying at a standstill until "price-fixing" is adjusted. Hampton Roads receipts increase and the slackening is general. Spot prices not yet definite, but understood to be on same basis as spring contracts. Pennsylvania grades dull. Anthracite receipts slightly improved.

Bituminous—With a Tidewater coal exchange soon to go into effect and sweeping reductions made in current prices, the week has not lacked for news. There is bound to be confusion in the spot market until prices have settled down to a workable basis. The Committee on Coal Production is now at work with the Railroads' War Board in an effort to rearrange shipments in instances where Middle Western operators are said to be selling in the East, while Eastern operators are delivering their product in the Middle West.

It will be especially interesting to see how the situation works out for Pocahontas and New River interests. The \$3 f.o.b. mine price fixed by the conference was for net tons of 2000 lb., or \$3.35 per gross ton of 2240 lb., the latter being the spring contract price (including selling commission) and the basis on which a very large proportion of the coastwise tonnage was sold early in the year. In effect, then, it is a scaling down of spot prices to the season contract level of \$4.85 f.o.b. Hampton Roads. On commercial coal, therefore, at Tidewater, the Pocahontas and New River factors are not likely to be caused any particular embarrassment should this price hold. The tonnage affected will be relatively small.

There will be more serious effects probably on deliveries to the West, where lucrative prices have prevailed all season. In the present leveling process this trade will be cut into by coal originating where tolls are less. Probably the volume of the smokeless coals to Tidewater will be much increased.

As to coal for naval use on which the operators were to offer a further reduction of 50c., the Navy Department has

made it clear that the agreement will not affect prices to the Government. The Secretary still intends to fix the price when the Federal Trade Commission has determined what is the present cost of production. Should this basis, when arrived at, prove more than 50 to 75c. less than the season price to commercial buyers there will doubtless be some aggressive complaints on the part of operating interests.

Meanwhile, receipts at Tidewater are increasing from week to week, and already the average detention at the Norfolk piers has been materially reduced. The machinery for handling the "pool" is now organized, and there is required only the support of mine operators, railroads, and shippers to put the arrangement into effect. The personnel commands confidence and if the exchange is wisely directed it will doubtless yield results.

Under the circumstances buying has practically ceased. F.o.b. sales were unheard of this week, and New England buyers are waiting for delivered prices that will be in keeping both with the new mine basis and the reduction in coastwise freights. On July 2, the Boston retailers marked bituminous down from \$10 to \$9.25 per net ton, delivered. Those who bought cargoes a week ago at \$10.50@11 alongside have the sympathy of their friends. The slackening is pronounced in every direction.

The steam grades from Pennsylvania are likely to respond promptly to the changed conditions. Since contracts are unaffected, we may now expect as liberal shipments as car service will permit. It has occurred to some, however, that output may decrease because of the lower prices for spot delivery. Operators have been able to afford handsome bonuses to mine-workers, but that will hardly be the case on the new basis. There are still some problems to be solved before New England gets its full quota of fuel.

It is too early to ascertain the attitude of operators either toward prices or the rule with regard to selling commissions. It will take time to stabilize both. Spot cargoes, in the interim, are a drug on the market, and not much more can be said for even the small accumulations at Philadelphia and New York awaiting purchase.

Bituminous at wholesale, f.o.b. loading ports at points designated, is quoted about as follows:

	Clearfields	Camb. and Somersets
Philadelphia.....	\$4.85@6.10	\$5.00@6.35
New York.....	5.20@6.50	5.25@6.75
F. o. b. mines.....	3.50@4.75	3.75@5.00
Alongside Boston (water coal).....	7.50@8.00	

Pocahontas and New River are now quoted at \$4.85@5.25, f.o.b. Norfolk or Newport News, Va., for spot coal, and \$9@10 on cars Boston or Providence for inland delivery.

Anthracite—June receipts at Boston showed a slight improvement over April and May. All-rail shipments are spasmodic, and vary with the different originating railroads.

There are evidences here and there of the strong arm of the Federal Trade Commission. The distribution of domestic sizes both all-rail and Tidewater is closely scrutinized and more than one shipper has had to modify his plans in deference to Governmental suggestion. Several factors have been asked pointedly why they are not sending coal to the same destinations as in former years, and those who have chartered their barge equipment on the high rates that prevailed are likely to be called upon for explanation.

Meanwhile, all the domestic sizes are extremely hard to get, and the producing companies are as indefinite as ever about prospects. If bituminous is scaled down in line with last week's program it may well be that the anthracite railroads will reduce their consumption of broken, egg and pea. That would be welcome news for New England, for the railroads that chiefly serve this territory from the mines either to Tidewater or to the transfer points, are at present using anthracite for engine fuel.

The "independent" shippers have apparently crawled into their holes. Prices that were announced for June were withdrawn before the end of the month, and July prices are not yet forthcoming.

NEW YORK

Anthracite shipments fail to improve and retailers are rushed with unfilled orders. Domestic coals scarce (with buckwheats plentiful). Bituminous market upset. Pooling inauguration postponed. Interest centers in Washington.

Anthracite—The market has escaped much of the turmoil prevalent in the bituminous situation, but there has been plenty going on to keep the trade busy. Demand continues exceptionally active but there is little coal to meet it. The promises of various officials of sufficient coal later in the year is not reassuring to the dealers, although the operators are apparently doing their utmost with the shortage of labor and and poor transportation facilities. Receipts of independent domestic coals are small and there has been no let-up in the efforts of retail dealers to obtain supplies.

An immense tonnage could be taken care of in this market. Dealers say their books contain many unfilled orders and the operators are unable to ship all the coal needed. Several inland dealers are without supplies and no dealer appears to have his bins filled. At the same time it is apparent that more house bins contain next winter's supply than is usually the case for this time of the year.

Call for egg, stove or chestnut is about evenly divided. No one seemed to have any free coals on hand and quotations were not obtainable although it is understood shippers are sticking close to the prices named by the Federal Trade Commission.

Pea coal is almost as scarce as the domestic coals. Demand is brisk. There is not much activity in the buckwheat coals. Demand is slow except on contracts and dealers are not anxious to close for next winter's business.

It is understood that the retailers have been asked by representatives of the Federal Trade Commission to submit reports showing their receipts of coal during the first five months of 1916 and 1917. These reports will no doubt be used to check up complaints of short receipts here.

Current quotations, per gross tons, f.o.b. Tidewater, at the lower ports, are as follows:

	Circular	Individual
Broken.....	\$5.50@5.65	
Egg.....	5.50@5.65	
Stove.....	5.75@5.90	
Chestnut.....	5.80@5.95	
Pea.....	4.10@4.55	\$5.50@6.00
Buck.....	4.00@4.15	4.50@5.00
Rice.....	3.40@4.05	3.50@4.00
Barley.....	2.90@3.10	2.75@2.90
Boiler.....		3.00@3.25

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—The developments during the week were many and caused much uneasiness and uncertainty among the trade. The new price agreement announced from Washington resulted in demand dropping suddenly and was followed by a restraint in buying. Consumers took advantage of the announcement and held off purchasing until the new schedule went into effect on Monday. There was instances where consumers who, without the formality of a contract, had placed a running order for a certain number of cars, instructed the shippers to hold up shipments until this week, so as to be able to obtain the coal cheaper.

It was announced that the inauguration of the pooling arrangement which was to have become operative on Monday of this week had been postponed for 30 days. No reason was given for the delay. The opinion of certain dealers that it will result in troubles continues to prevail and serious difficulty is looked for by large consumers.

Following the announcement of the new prices for bituminous coal, some wholesale dealers sent letters to their trade notifying them of the readjustment and also stating that the new prices would have no effect on contracts and sales made prior to July 1, whether the prices named be higher or lower than the Washington agreement provides for. Dealers do not look for many cancellations of contracts where the price is higher than \$3, as it is expected that these consumers will be likely to get their full requirements. With contracts getting the preference in shipments and a brisk demand from all-rail dealers it is believed the free coal market will face a serious shortage.

The increase in bituminous freight rates granted the railroads by the Interstate Commerce Commission makes the rate to most of the New York loading docks \$1.70 instead of \$1.55.

The repudiation of the agreement to fix the mine price of coal at \$3 by both Secretary of War Baker and Secretary of the Navy Daniels resulted in uncertainty on Monday and operators and shippers hardly knew what course to pursue. Buying was practically at a standstill, buyers taking only what was necessary.

The question of supply for the railroads, particularly the Pennsylvania, has not yet

been settled although several meetings of operators have taken place. The Pennsylvania requires about 6,000,000 tons and wants to buy it at a much lower figure than the operators want to sell at.

Supply at the docks is low and although demand fell off considerably coal was so scarce that shippers did not have to urge buying nor make big concessions to move stocks. Quotations averaged from 75c. to \$1 lower than last week.

Car supply shows a slight improvement but continues below the 50 per cent. mark.

Buying was quiet on Monday following the Washington developments. Quotations heard were on coal which had arrived at the loading docks previous to July 1 and which it was believed did not come within the provisions of the agreement. No quotations were heard on coal that had not been shipped.

The mine regions was the gathering place of buyers who were trying to make purchases of supplies at the new prices. Most operators it was said were holding off and waiting new developments. Some wholesale dealers were taking new business subject to prevailing market prices at the time shipment is made.

Current quotations, per gross ton, f.o.b. Tidewater, for various grades are as follows:

	Port Reading	South Amboy	Mine Price
George Crk.			
Big Vein	\$7.00@7.25	\$7.00@7.25	\$5.50@5.75
Tyson	6.75@7.00	6.75@7.00	5.25@5.50
Clearfield	6.75@7.00	6.75@7.00	5.00@5.25
South Frk.	7.00@7.25	7.00@7.25	5.25@5.50
Nanty Clo.	7.00@7.25	7.00@7.25	5.25@5.50
Som'r. Co.	6.75@7.00	6.75@7.00	5.00@5.25
Que'ho'ing.	7.00@7.25	7.00@7.25	5.25@5.50
W. V. Fa'm't			
Th'r'qua.	7.00@7.50	7.00@7.50	5.50@6.00
Mine-run	7.00@7.50	7.00@7.50	5.50@6.00
West. Md.	6.50@6.75	6.50@6.75	5.00@5.25

PHILADELPHIA

Anthracite dealers growing calm. July to be a deciding month. Some steam coals fall off and barley and rice go into storage. New price circulars out with usual advance. Bituminous trade unsettled by price agreement. Lack of official information causes confusion. Much conjecture as to effect of agreement. Increased freight rates effective.

Anthracite—Notwithstanding the light shipments of the past week or ten days, the dealers appear less panicky than for some time. None of the companies have been consigning much coal in this direction and the comparative calmness that has come over the retailers is not due to any increased stocks. They seem convinced, if only because of the watchfulness of the Government, that there is no immediate likelihood of their being compelled to pay exorbitant rates. They are booking very little new business and feel satisfied they will, within a few weeks, begin to receive substantial shipments, as promised by the larger operators.

Many of them, however, look to this month as the decisive point in the trade. They have now decided that if the end of the present month is reached with no distinct increase in receipts, that the anthracite business will be in a serious condition to go into the winter. At this time practically all yards are empty, or nearly so, and their proprietors are being tormented by their customers, though at this time they are viewing the situation optimistically.

Broken for transient business is almost unheard of; nearly every car shipped is applied on an important contract for industrial use. The dealers long ago learned they would be compelled to do without this size for their domestic trade and invariably use egg as a substitute, so that the latter size is also in great demand.

Little or no ground has been gained in stove, and a large proportion of the retailers' unfilled business of early April is for this size. There is very little in the dealers' yards, for as soon as a car is received it is immediately unloaded directly into their trucks or wagons and rushed to some disgruntled householder who has probably been waiting to close his home for the summer. Chestnut, while not at all free, is the easiest of the family sizes. It will, however, continue to be bought in great quantities and it is sure to be a long while before the supply exceeds the demand.

That the pea-coal situation remains the same is shown by the trades' willingness to pay from \$3.70 to \$4.55 at mines to the individuals for it. At least one company openly tells its customers that they must look elsewhere for it, as they will have but a small quantity of free pea coal. It is being applied on contracts for manufactur-

ing purposes, taken after the prospective production of buckwheat had all been sold.

Buckwheat is strong, though the demand for immediate use is not as great as a month or two ago. The consumers of this popular steam size are making unusual efforts to store it. They are enlarging their present storage plants and renting available spaces and buying the coal for future use. Rice is not so strong as formerly, but more in demand than barley, which is the weakest of the steam coals.

As a matter of fact, one of the largest producing companies is beginning to dump a quantity of these two latter sizes in their storage yards. When this became known the story was soon magnified to the extent that the retailers said the companies were storing all sizes and the break had come at last. However, we know that the only sizes that have been sent into storage are the two steam grades mentioned and the far greater proportion is of barley. It is altogether possible that there will be some storage of these two sizes all summer, but before winter is over the storage yards will be bare; in other words, it is but a temporary lull.

As to prices on the sizes for industrial use, \$5.50 at mines is known to have been offered for broken, which is \$1 advance over the rate at which some company contracts were taken. Buckwheat has been sold at \$3.50 in small lots for spot coal, with rice around \$2.30. Recent sales of barley have been made at from \$1.75 to \$2, which a month or two ago brought \$2.50.

There continues to be quite a little complaint by the retailers as to the preparation of coal and in many cases this is justified, but the coal is being taken in and stored in customers' cellars and will probably not be heard from until next winter. As an example, a new dealer without permanent shipping connections, this week bought a car of chestnut at \$5.25 at the mines, and a car of pea at \$4.25, in which the percentage of coal hardly ran over 50 per cent.

The Federal Trade Commission recently requested shippers to prepare comparative statements showing shipments to each Philadelphia dealer during the months of April, May and June for the years 1915, 1916 and 1917. That they are still interested in the prices being charged these retailers is shown by their continued visits to the retailers' offices and their requests to be allowed to go over the books. The representative dealers still claim they are anxious to be investigated.

The extensive newspaper space given to the soft-coal price discussion has had its effect on the anthracite retail interests, as the impression became general that anthracite would also share in the proposed reduction and some customers even went to the trouble to cancel their orders with the retailer. Even though the dealer informed the customer that prices had actually increased 10c, this information seemed to make but little impression. It cannot be said that the retail men have any reluctance in cancelling orders when so requested, especially if they happen to have been taken at the low April prices.

As forecasted last week, the price circulars of the larger shipping interests came out promptly notifying the trade of the usual 10c. per ton advance.

The prices per gross ton, f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for Tide, are as follows:

	Line	Tide	Line	Tide
Broken	\$5.00	\$6.15	Buck	\$2.90 \$3.80
Egg	4.25	5.35	Rice	2.40 3.40
Stove	4.50	5.70	Boiler	2.20 3.30
Nut	4.60	5.65	Barley	1.90 2.15
Pea	3.20	4.10		

Bituminous—The disagreement at Washington in the matter of fixing a standard price on coal for a time unsettled the business. The shippers continue to insist that if the car supply had been at all adequate there would likely never have been any occasion for any price fixing. The claim is justly made that even with restricted labor conditions they were unable to make the most of the men in the mines.

At the present time the bituminous trade is somewhat shaken, as all seem to feel that if the present arrangement falls there will surely be action of some kind taken. It looks as though there would be a scarcity of coal all this week, owing to the Fourth of July, as the week will be badly broken up and little work done by the miners.

Inasmuch as the Federal Trade Commission some time ago reached an agreement with the anthracite interests as to a maximum price for their coal, it begins to look, under present conditions, that there will be something of a demand for bituminous coal for domestic consumption locally, as the price difference between the two is

such as to make it worth while to the persons of an economic turn of mind. The freight rates have always been more favorable to anthracite, which divergence was still further increased a few months since when anthracite was reduced to points within the state, and this disparity has now been still further increased by the increase of 15c. a ton in bituminous rates which became effective on July 1.

It is really curious to note what little interest the recent increase in the freight rates of bituminous occasioned in the trade, as many consumers were practically uninformed as to the change.

Prices per gross ton, f.o.b. cars at mines, are:

Georges Creek Big Vein	\$6.00@6.25
South Fork Miller Vein	6.00@6.25
Clearfield (ordinary)	5.75@6.00
Somerset (ordinary)	5.75@6.00
West Va. Freeport	5.25@5.50
Fairmont gas lump	5.75@6.00
Fairmont gas, mine-run	5.50@5.75
Fairmont gas, slack	5.25@5.50
Fairmont lump, ordinary	5.50@5.75
Fairmont mine-run	5.25@5.50
Fairmont slack	5.25@5.50

BALTIMORE

Soft coal trade in worst muddle in its history. Agreement with Government not binding for time being. Hard coal scarce and situation on that also uncertain.

Bituminous—Never has the soft coal trade faced a more uncertain situation. When the Secretary of War, as chairman of the Council of National Defense, repudiated the agreement for a \$3 maximum as agreed upon by the coal operators and shippers with the Coal Production Committee, the Secretary of the Interior and the representatives of the Federal Trade Board, the situation was again up in the air. Monday saw such a state of uncertainty that there was little or no trading. The first two days of the week as a matter of fact saw everything at a practical standstill, and with Independence Day as the third working period, there was little prospect of a real settling down to business again before the end of the present week.

One thing is sure—there are practically no sales recorded at \$3. A few coal men, in the full faith of the upholding of a government agreement, may have promised to let some coal go at that price, but very little fuel will change hands under such an arrangement. Monday and Tuesday saw some sales, and in most cases these were about at the old prices, or were under an understanding between the consumer and the coal man that a fair market rate would be billed in the event the old government agreement of \$3 maximum did not stand.

The following is what coals are worth while the government officials haggle over whether \$3 a ton at the mines is or is not an exorbitant rate: Georges Creek Tyson, \$5.50; Somerset, \$5.25; Quemahoning, \$5.50; Clearfield, \$5; Freeport, \$4.75; Fairmont gas, three-quarter, \$5.25; run-of-mine, \$5; slack, \$5.25.

Coal men here have shown a spirit of willingness to cooperate with the government plan, while doubting its feasibility. Many say that a \$3 maximum would curtail production at a time when coal is badly needed. They also see a stoppage of the immense tonnage that is now being gotten out by farmers at some distance from railroads, and who cannot make profits at \$3 at a time when labor, etc., is so high.

In the middle of other complicated figuring the trade here on July 1 faced a change in freight rates. Fairmont and West Virginia coals generally take an all rail rate of \$2; with \$1.75 for tidewater harbor coal, and \$1.48 for outside the capes, the last being the same as formerly and the first two a 15c. advance. All other coals, such as Somerset, Myersdale, etc., come under an all-rail rate of \$1.75, \$1.50 for tidewater, and \$1.25, outside the capes, the last being unchanged from the old rating. West Virginia coke is advanced to \$1.75 and Connellsville coke to \$1.95.

Anthracite—Hard coal men are doing their own figuring too. Little or no coal is coming through. Practically none is at the circular prices of the larger companies. The smaller independents without railroad adjuncts of operation are charging the 5c. premium allowed to the circular price for such concerns, and are then in many cases tacking on an added premium that runs up to 40c. This premium of 75c. was expected to be allowed them over set circular price for the big producers under government regulation. In this matter they are now up in the air along with the soft coal men. Meanwhile the proposition to advance retail prices here another 10c. on July 1 to care for the increased cost of coal coming through here is held in abeyance.

Ocean Shipping

OCEAN FREIGHTS

During the past week there has been very little change in the freight situation for export coal, and very few charters were affected, and none of any importance reported. Freight rates to all destinations still tend to higher levels on account of the tonnage scarcity.

We would quote freight rates on coal by steamer as follows:

Europe	June 30	July 7
West Coast Italy.		
Marseilles.....	\$100.00 about	\$100.00 about
Spain (Atlantic)*	30.00@36.00	30.00@36.00
Spain (Med't'n)*	32.40@38.40	32.40@38.40

Note—Charters for Italy, France and Spain read: "Lay days to commence on steamer's arrival at or off port of discharge."

South America	June 30	July 7
Montevideo.....	\$30.00@30.60	\$30.00@30.60
Buenos Aires.....	30.00@30.60	30.00@30.60
Rosario.....	32.16 about	31.68 about
Rio Janeiro.....	32.50 about	32.50 about
Santos.....	34.00 about	34.00 about
Chile (good port).....	17.50@18.50	17.50@18.50

West Indies	June 30	July 7
Havana.....	6.00 about	5.75@6.00
Cardenas, Sagua.....	7.50@8.00	7.50@8.00
Cienfuegos.....	8.00 about	8.00 about
Port au Spain.....	10.75 about	10.75 about
St. Lucia.....	10.75 about	10.75 about
St. Thomas.....	8.75@9.00	9.00@9.50
Barbados.....	10.75 about	10.75 about
Kingston.....	7.50@8.00	7.50@7.75
Curacao.....	8.75@9.25	9.00@9.50
Santiago.....	8.00 about	8.00 about
Guantanamo.....	8.00 about	8.00 about
Bermuda.....	7.00 about	7.00@8.00

Mexico	June 30	July 7
Vera Cruz.....	9.00@10.00	9.00@10.00
Tampico.....	9.00@10.00	9.00@10.00

* Spanish dues for account of cargo. * And p.e.
 * Other good Spanish port. * Net.
 W. W. Battie & Co.'s Coal Trade Freight Repot

COASTWISE FREIGHTS

Barges have been chartered this week at \$2.75, Hampton Roads to Boston, the lowest rate since early in the year. The best opinion is that freights will still further recede in line with reductions in the price of coal. There is a fair supply of barges, due partly to shippers who declined naming season rates on their transportation and also to the number of barges in the open market that under normal conditions would be carrying anthracite.

Rates on Long Island Sound, New York loading, are \$1.40@1.50 to Providence. All coastwise freights are believed to be susceptible of further softening.

Lake Markets

PITTSBURGH

Trade waiting further developments in price controversy at Washington. Position of brokers uncertain.

Many of the contracts that expired Mar. 31 were continued on the tentative basis of shipments being made as formerly, price to be adjusted weekly. In many cases these adjustments were at somewhat under the open market for spot coal. These arrangements will continue, at the fixed price, and the amount sold in the open market at the fixed price will be only a small fraction, say a fourth, of the total production. In anticipation of action on prices the spot market was quiet the fore part of last week while on Friday and Saturday consumers dropped out entirely, awaiting news from Washington.

We quote gas and steam coal at \$3@3.25 for slack and mine-run and up to \$3.50@3.75 for domestic, per net ton at mine, Pittsburgh district.

BUFFALO

Everything upset by Government action. Jobbers as a rule have sold nothing but for quick delivery. No quotable prices. Anthracite moving fast by Lake.

Bituminous—If the \$3 maximum price had been fixed this would mean a reduction at the mines of about \$2 a net ton and a cutting of the jobber's profit in half, without reference to running cost, for this is gross, and way expenses must come out of that. The new price would hit the jobber much harder than it does the operator.

Some jobbers would have been glad to have the Government fix prices, even if it had hit them hard. They are tired of selling coal without any idea of what it is go-

ing to cost them, or of waiting to have an order accepted at the mine before a sale can be made. The main difficulty has been that the operator had a way of filling part of an order and then holding off and finally asking more for the rest of it. If the new order of things would insure a good car supply it would be generally welcomed, but there is no assurance of that and jobbers say it is not likely to happen.

Quotations of bituminous will be next to impossible, as nobody knows what is to become of the coal sold and not paid for. Nominally, however, this can be covered by reducing new sales \$2 net. Jobbers at the same time say that they see no reason why they cannot sell to the Canadian trade as before if they choose, so that the following table is a guide to that at least, by adding the Canadian duty:

Youghiogheny Gas.....	\$6.25@6.75
Pittsburgh Steam.....	6.10@6.60
Ohio No. 8.....	6.05@6.55
Bessemer.....	5.95@6.45
Allegheny Valley.....	5.85@6.35
Cambria Co. Smithing.....	6.75@7.25
Pennsylvania Smokeless.....	6.50@7.00
All Slack.....	5.80@6.30
Cannel.....	6.40@6.90

All quotations are per net ton, f.o.b. Buffalo.

Anthracite—The situation is not much affected as yet by the move to regulate bituminous prices and the city distributors are of the opinion that they are gaining on the demand. The actual situation is hard to make out, for consumers are demanding a full winter supply at once. Complaint that too much is going up the Lakes is still made, but shippers cannot afford to pay much attention to that, as they must move the bulk of the upper-Lake supply now if at all. Canadian retailers are still coming here in great numbers, with the statement that they have no coal and the consumers are giving them no peace, claiming that they are not going to get enough for winter.

Anthracite shipments by Lake fell off to 89,750 net tons for the week, of which 35,000 tons cleared for Duluth and Superior, 17,500 tons for Milwaukee, 8200 tons for Sheboygan, 3000 tons each for Hancock and Port Arthur, 6300 tons for Fort William, 5300 tons for Chicago, and 1450 tons for Manitowoc.

Lake rates are still unsteady, but in general are 75c. to Sheboygan and Hancock, 85c. for Manitowoc, 50c. for Chicago and Milwaukee and 45 to 50c. to Duluth, Fort William and Port Arthur.

Shipments for June were 485,350 tons, as against 307,210 tons for June last season; for the season the amount is 1,107,845 tons and for the season of 1916 to date, 868,606 tons. Allowance should be made for quite an amount of this tonnage that reported at Erie, Penn., last season.

DETROIT

Demand from steam users eases off but supply remains short. Little anthracite is arriving. Lake shipments gain in volume.

Bituminous—Even though some of the large users of steam coal are holding back orders in expectation of lower prices, no excess supply has developed here. The price of \$3 at the mines proposed by Secretary Lane and approved by bituminous operators in Washington, represents a reduction that so far as the local market is concerned, is partially offset by increases in freight rates. The actual reduction in price delivered in Detroit is estimated by jobbers as somewhere between 50c. and \$1 a ton. Some of the jobbers are quoting nut, pea and slack at \$3.25 at the mines.

Difficulties experienced in obtaining raw material and the fact that trade in some lines is less active are factors contributing toward a slight lessening of operations in some industrial lines and a consequent shortening of inquiry for steam coal. Consumers of domestic stock are still out of the market. Retail dealers are unwilling to tie up their capital at this time, with the possibility that coal may be had at lower prices later and orders are in small volume.

Anthracite—The buying of anthracite is also characterized by lack of enthusiasm among retailers. Incoming shipments do not make a large total and owners of retail yards seem perfectly willing to hold off and take chances on being able to get coal at a lower price before the occasion arises for its use. Orders have been booked from many consumers to whom delivery has not yet been made.

Lake Trade—Scarcity of cars and motive power is held responsible for slow delivery of coal at Lake Erie docks. Some improvement is noted, however, through operation of the pooling plan. Quite a number of vessels that might be carrying coal rather than await its arrival and unloading are making the upbound trip without cargoes.

COLUMBUS

Trade quiet pending more definite action on the part of Government as to prices but demand for Lake tonnage continues strong.

The trade is marking time with buying limited to what tonnage is absolutely necessary, but there was no over-supply as the Lake trade readily absorbed all of the surplus. Prices continued strong at former levels throughout the week.

Domestic buying has been scarce as dealers are waiting for lower quotations. The stocking movement has not yet been started to any extent and it is expected that buying will be rather active from this time on. Retailers have been asking the consumers to hold off, believing that lower prices would prevail. Just what the retail prices will be is a matter of conjecture as a period of readjustment is inevitable. It is believed, however, that Hocking lump will be sold at between \$5 and \$5.50, while other grades may be cut from \$1 to \$1.50 per ton. Pocahontas is still strong and stocks are scarce. There is a marked scarcity of anthracite and coke for domestic purposes.

Steam trade has been rather quiet as most of the buyers have held off for lower prices, but demand is still good and producers anticipate a rush of steam business in the near future. It is thought that many of the larger consumers will place good orders for stocking as a form of insurance against short car supply and scarcity of labor. Railroads have succeeded in placing a large part of their fuel contracts at something below the Government's fixed price. Iron and steel plants are using a large tonnage and they are constant buyers.

Production has been quite active during the week as the car situation has been fairly good. This is especially true in the Hocking Valley and Jackson fields. Pomeroy Bend is also producing a better tonnage. Eastern Ohio operators are still hampered by lack of cars.

The Lake trade is by far the strongest feature of the market. Lake shippers are using every means to get a large tonnage to the Northwest. Lake contracts will not be affected to any great extent by the Government price. The vessel movement is good and docks at all Ohio Lake ports are busy.

Prices on short tons, f.o.b. mines, are as follows:

	Hocking	Pomeroy	Eastern Ohio
Rescreened lump.....	\$3.50	\$3.50	
Inch and a quarter.....	3.00	3.00	\$3.00
Three-quarter inch.....	3.00	3.00	3.00
Nut.....	3.00	3.00	3.00
Egg.....	3.00	3.00	
Mine run.....	3.00	3.00	3.00
Nut, pea and slack.....	3.00	3.00	3.00
Coarse slack.....	3.00	3.00	3.00

CINCINNATI

Federal price controversy has tended to limit dealings temporarily. Indications are that maximum figures will prevail, and that supply will remain a problem.

The agreement reached between operators and the Federal government regarding maximum prices for coal and the later repudiation of same has naturally served to control dealings during the past week, inasmuch as nobody on either side of the market cared to make commitments. At the same time, operators point out that fixing prices on a definite basis does not solve the problem of the car and labor shortage, and that some means are still to be found for taking care of the requirements of the country. So far there is no indication that the railroads will be able to forward a sufficient amount of coal to prevent the practical shortage which has all along been in evidence, and this is the real problem of the trade, as the coal operators view it. Large industrial consumers, it is declared, will still be unable to secure contracts covering their needs for the year, as operators cannot feel assured of ability to take care of such contracts.

LOUISVILLE

Price regulations upset Kentucky coal trade. Sales restricted to immediate necessities. Operating retailers stocking yards.

A sort of temporary paralysis settled on the Kentucky coal trade with the announcement that the operators had agreed to the Government's demands for reduction in the price of coal which was later repudiated. Immediately all consumers whose needs were not immediate, postponed purchases. Coal operators and sales agencies were deluged with inquiries as to whether purchases on the lower basis indicated by the dispatches could be made. Retail dealers asked for immediate deliveries at "government prices" and many offers to pur-

chase at the price to be determined on later were refused on all sides. Operators with retail sales organizations made the most of the first opportunity they have had to stock some coal in all their own yards and the practice generally is to quote at the recently prevailing market for immediate deliveries.

Members of the trade are considerably troubled as to the outlook, dubious about what will happen to labor, as to whether those operators who do reduce prices will be preferred in distribution of cars, etc. There is an inclination to predict that the plan will be a failure, result in closing down of many mines and production of less coal, with the possibility of the Government taking over actual operations on a military basis.

Coke

CONNELLSVILLE

Scramble for spot coke to tide over Independence Day produces record prices. Market now nominal awaiting further developments. Government price regulation possible.

In the closing days of last week the spot coke market experienced a spectacular advance, overtopping by \$2.50 the previous record price of \$13 attained for a short time last February. There had been a better car supply promised by the order of the Commission on Car Service at Washington, dated June 19, and instructing the railroads to increase the supply by 20 per cent., but it was a condition confronting furnaces, that Independence Day always cuts down the week's production severely and the spot buying occurred in an effort to make up. Pittsburgh & Lake Erie cars, which cannot leave the New York Central lines, were not in heavy demand, and brought \$13@13.50, but Pennsylvania and Baltimore & Ohio brought close to \$15 on Thursday, and on Friday up to \$15.50, there being less demand Saturday. By the beginning of this week the demand had practically passed and the market is now nominal, awaiting a fresh level of prices to be developed after the holidays.

Many of the furnace-coke contracts expired June 30. A few of these were replaced over a month ago by other contracts at higher prices, say from \$7 up to \$8.50, and then the business at flat prices ceased. Practically all of the remaining contracts have simply been continued on the basis of shipments as usual with the settlement price to be adjusted weekly according to the prices developed in the spot market. How this will work out remains to be seen, but beyond that looms the possibility if not probability that the Government will take steps to raise a fixed price to be established, as is being done in the case of coal. Such a price would probably be arranged in relation to whatever coal price was decided upon, taking a yield of two-thirds and allowing \$1 or thereabouts for coking, and on this basis the coke price would be \$5.50, with a \$3 price for coal. Unless the market price of pig iron is to be scaled down greatly, however, a much higher coke price would probably be allowed, but iron and steel price regulation is regarded as far from improbable.

At this writing there is no established market. The spot market at the end of last week, \$13@15.50, is expected to yield, while for some time past there has been no contract market.

The "Courier" reports production in the Connelville and lower Connelville region in the week ended June 23 at 361,661 tons, an increase of 7202 tons, and shipments at 378,145 tons, an increase of 33,022 tons. The shipments represent the cars passing the railroad scales and as there has been delays the increase in shipments from ovens was not as great as indicated.

Buffalo—The market is in an unquotable condition, shippers appearing to be asking what they please. A jobber reports that he paid for his last purchase \$16.50 per ton for 72-hour foundry at the ovens, which would make the Buffalo spot price \$18.35 for the same grade here. It is not expected that the above price will prevail for any length of time.

Middle Western

GENERAL REVIEW

Price changes small. Slight improvement in car situation. Shipments continue heavy, but buying is light due to pressure being brought by the Government to reduce prices.

There has been quite a falling off of orders due to the expected reduction in

prices. This is very noticeable especially on business coming from the retailers, and while some cancellations have been made it has not seriously hindered shipments.

Car supply during the past week has averaged about 70% in southern Illinois, about 80% in the northern field, and a little better than 60% throughout Indiana. Reports from Eastern fields are to the effect that supply has been poor; also that shipments West have not increased, and embargoes have interfered with Western movement to some extent.

Lake shipments are about normal for this season of the year, but very little stock is being accumulated by the various docks at the head of the Lakes. Shipments are being made to the trade as fast as boat arrivals and car supply will permit. No announcement has as yet been made regarding July prices.

Shipments of anthracite to mid-west points have been light and retailers are very much worried over the failure to secure adequate shipments. Boat arrivals at Chicago have not come up to expectations, and all-rail shipments have been less than earlier in the month.

Canadian railroads have been in the market offering to purchase in large quantities and have placed some business in Indiana and Illinois, but owing to demands by the railroads serving these fields for storage coal, shippers refused to accept the entire order requirements.

CHICAGO

Demand very heavy in Chicago. Shipments from the East are light, and retailers supplies very low. Car situation some better.

The supply of anthracite is very light and buying is eager, with the result that neither wholesaler or dealer has been able to accumulate any. In bituminous, the Eastern grades are kept off the market by car shortage, also due to the fact that as compared to Western prices Eastern coals are commanding a figure that is too high to attract storage buying.

In Franklin County the mines have been running as steadily as labor and car supply would allow, which has been a little better than earlier in the month. The June production will approximate 1,100,000 tons which is 500,000 tons more than for the same period last year. The retailers are receiving the bulk of this tonnage, and shipments are being scattered over a very wide area. Steam business has been very good with little change in prices.

Saline and Williamson counties are receiving as high as \$4 for domestic sizes, but the bulk of the tonnage is moving at much lower figures, and conditions are not much different from Franklin County, except that the mines in the former counties have taken on more railroad business, whereas Franklin County shippers have catered more to the domestic trade. Car supply has been fairly good, and some improvement is also noted in the labor supply.

In the Springfield district most of the coal is being moved on railroad contracts; free coal offerings are commanding good prices, and outside of lump very little of this is moving to the retail trade. Screenings and mine-run are in good demand with no change in prices.

Quotations in the Chicago market are as follows, per net ton f.o.b. cars at mines:

	Springfield	Fulton and Peoria Cos.	Clinton and Sullivan Cos.	Green and Knox Cos.	Carterville
Domestic lump.....	\$3.25@3.35	\$3.25	\$3.50@3.75	\$3.25@3.50	\$3.50@3.75
Steam lump.....	3.00	2.75@3.00	3.00	3.00	3.00
Egg.....	3.25@3.35	3.25@3.50	3.50@3.75	3.25@3.50	3.50@3.75
Nut.....	3.25@3.35	3.25@3.50	3.50@3.75	3.25@3.50	3.50@3.75
Mine-run.....	2.50@3.00	2.75@3.00	2.75@3.25	2.50@2.75	3.00@3.25
Screenings.....	2.25@2.75	2.25@2.75	2.75@3.00	2.50@2.75	2.75@3.25
	Williamson and Franklin Cos.	Saline and Harrisburg	Poca and W. Va. Smokeless	Penna. Smokeless	Eastern Kentucky
Lump.....	\$3.25@3.75	\$3.25@4.00	\$5.00@5.50	\$5.00@6.00	\$5.00@5.50
Egg.....	3.25@3.75	3.25@4.00	5.00@5.50	5.00@6.00	5.00@5.50
Nut.....	3.25@3.75	3.25@3.75	5.00@5.50		5.00@5.50
No. 1 nut.....	3.25@3.75	3.25@3.75			
No. 2 nut.....	3.25@3.75	3.25@3.75			
No. 3 nut.....	3.25@3.50	3.25@3.50			
No. 1 washed.....	3.25@3.75	3.25@3.75			
No. 2 washed.....	3.25@3.75	3.25@3.75			
Mine-run.....	2.75@3.25	2.75@3.25	5.00@5.25	5.00@5.50	5.00@5.25
Screenings.....	2.75@3.00	2.75@3.00			
Hocking Lump \$4.25@4.75. Splint Lump \$4.25@4.75.					

Grundy, LaSalle, Bureau and Will Counties:

Lump-Furnace and No. 1 Nut.....	\$3.25@3.75
Washed nut.....	3.50
Screenings—washed.....	3.25@3.35
Screenings—raw.....	2.75@3.00
Steam lump and mine-run.....	2.75@3.25

The Indiana market has been a little nervous. The retailers and householders have been disposed to buy storage coal, but have been withholding their orders for the time being, on account of the uncertainty of prices after July 1. Car supply in the Indiana field has averaged about 60%, and quite a bit of the movement has been to the railroads.

There has been no change in the smokeless market as far as prices are concerned. Very little of this coal is moving to Chicago, and the small amount offered by the retailers is commanding better prices than anthracite.

The shipment of Hocking coal to this market has practically stopped. Prices are out of line with Western coal, and the mines are unable to take care of the demands for the trade nearer home. This is also true of Splint and New River coals.

Eastern Kentucky coals are being quoted at variable prices, from \$5 per ton up. Chicago retailers are making no attempt to take on much of this coal on account of the high prices. The retail price for sidewalk delivery makes this coal prohibitory.

ST. LOUIS

Government intervention causes a suspension of business. No demand, but market is holding well under the circumstances on account of heavy railroad demands. Steam demand light and country tonnage good. Eastern coals scarce and uncertain future on everything. Car supply short.

At the close of last week the market came to a standstill. Dealers were unable to take any coal because their customers have cancelled orders, expecting the market to drop anywhere from \$1 to \$3 a ton. Steam users cancelled their orders, expecting a reduction also. The operators, however, insisted on shipping and everybody is very much up in the air.

The general opinion among local coal shippers is that at the meeting in Washington last week nothing was done that will interfere with the present prices in the Illinois field. These prices are not unreasonable, as even the consumers of large quantities admit.

The prevailing opinion seems to be that in the Williamson and Franklin County field a maximum of \$3.50 for domestic sizes will prevail, and that a mine-run basis of from \$2.75 to \$3 will be arrived at.

In the Mt. Olive field the prices have been reasonable, and these are likely to be maintained. The maximum is \$3 for domestic sizes for country business, and \$2.25 for restricted equipment in St. Louis.

In the Standard field there is no occasion to regulate prices, for these operators only a few weeks ago were giving their coal away at below the cost of production, and it is likely that a price of about \$2.25 to \$2.50 on 6-in. lump and \$2 on 2-in. lump will prevail, with steam sizes depending upon the supply and demand.

The market has gone to pieces so far as the demand is concerned. Prices remain good, but the coal is being applied on railroad business principally and the operators are not trying to congest the market with coal that has to be sold on the open, in this way protecting dealers who have large tonnages bought and in storage.

The country demand in the past week was exceptionally good for all kinds of coal. Williamson and Franklin County was

strong in the country, while weak in the cities. The city largely is swinging from high grade to Mt. Olive and Standard coals. In the Mt. Olive field the demand has been good, and the operators are having no trouble in disposing of what they have at the circular price. The railroad tonnage from this field is still heavy.

In the Standard field the market held its own as regards prices. The railroad tonnage here is also heavy. Chicago is a heavy buyer even after the rumors that unsettled local conditions on all grades of coal.

The car supply throughout all fields has been about two and one-half days this week.

Steam coal in a general way is weak. Anthracite is more free than it has been. It is estimated that between 80 and 90 cars came in the past week, with about 24 to 28 cars of smokeless. While the tonnage of Arkansas was about 40 cars, so that the market is not crowded with these grades of coal.

The prevailing circular price per net ton, f.o.b. mines, is:

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump.....	\$3.50	\$2.25	\$2.25
3x6 in. egg.....	3.50	2.25	2.25
2x3 in. nut.....	3.50	2.25	2.25
No. 2 nut.....	3.25		
No. 3 nut.....	3.10		
No. 4 nut.....	3.00		
No. 5 nut.....	2.50		
2-in. screenings..	2.50	2.25	1.75
2-in. lump.....			2.00
3-in. lump.....		2.25	
Steam egg.....	3.40	2.25	2.00
Mine run.....	3.00	2.25	2.00
Washed:			
No. 1.....	3.50		
No. 2.....	3.25		
No. 3.....	3.10		
No. 4.....	3.00		
No. 5.....	2.50		

Rate on Williamson and Franklin County is 72½c. Rate on other fields is 57½c.

MILWAUKEE

Regular monthly increase in the anthracite circular goes in effect. State investigation of prices.

Notwithstanding the apparent dissatisfaction of the State Council of Defense with the prevailing prices of anthracite coal, the customary advance of 10c. per ton was made by wholesalers on July 1. Egg and stove now retail at \$9.15, nut at \$9.40, pea at \$8.20 and buckwheat at \$7.70, with an extra charge of 50c. for putting it into bins. Coke was advanced 25c. per ton, nut coke being \$9.50 and pea \$7.50.

The hard-coal business received an airing at the hands of the State Council of Defense during the week. Joseph W. Simpson of the Milwaukee-Western Fuel Co. and C. A. Granger of the Lehigh Valley Coal Sales Co. were both closely grilled as to costs, etc. Mr. Simpson testified that his company disposed of about 250,000 tons of hard coal in Milwaukee annually, of which 60,000 tons were sold at retail. The coal was sold on commission for the Delaware, Lackawanna & Western Co. Questions put to both witnesses brought out the following information:

That the price of coal at the mines is \$3.60 per ton. That the combined lake and rail freight charges brings the price to \$5.40 per ton at the dock in Milwaukee. That there is a jump from the cost at the dock to \$7.45 to retailers. That retailers add \$1.50 per ton, making the price \$8.95, with an additional charge of 50c. per ton for carrying in. The witnesses could not explain who got the \$2.05 profit from the dock to the retailer. It was also brought out that with a freight rate of \$1.25 per ton from Milwaukee to Madison, Wis., dealers in the latter city could sell hard coal at \$10.20 per ton and receive the same profit as Milwaukee retailers. It was stated that hard coal was selling at \$10.45 in Dodgeville and \$10.10 in River Falls, the freight rate in both cases being the same as between Milwaukee and Madison.

The investigation is to be continued and many other witnesses examined.

Milwaukee coal men are not satisfied with the promised soft coal reduction as a result of the conference at Washington. They maintain that prices should be nearer those which prevailed a year ago. Recent prices, they hold, offer no intelligent basis from which to figure. If the agreement holds, consumers will pay more for soft coal than they did in 1916 and preceding years.

Gov. Philipp has signed the bill providing for an occupational tax on coal and coal companies will now be compelled to pay 1½c. per ton on all coal handled during the year, instead of being assessed upon the amount on hand at tax-paying time.

A number of large manufacturing concerns, which, in past years, have been content if deliveries kept pace with the daily consumption, are now storing coal in the belief that there is going to be a serious shortage next winter.

General Statistics

IMPORTS AND EXPORTS

The following is a comparative statement of coal imports and exports of the United States for April, 1916-17, and for the 10 months ended April, 1915-16-17, in long tons:

	April 1916	April 1917	1915	10 Months 1916	1917
IMPORTS					
Anthracite, total.....	34	50	12,305	7,199	1,573
Bituminous, total.....	147,792	96,139	1,221,749	1,408,457	1,134,130
United Kingdom.....	1,273	849	32,962	7,671	6,331
Canada.....	136,464	87,862	959,072	1,244,659	1,039,610
Japan.....	9,980		72,980	70,400	59,696
Australia.....	75	7,428	154,907	84,031	26,823
Other countries.....			1,828	1,696	1,670
Coke.....	7,766	1,466	80,342	51,047	22,421
EXPORTS					
Anthracite total.....	218,982	586,415	2,906,858	2,913,259	3,603,952
Canada.....	211,867	578,061	2,856,521	2,800,089	3,533,276
Argentina.....	995		212	2,926	2,684
Brazil.....			24	2,472	1,555
Uruguay.....				600	200
Other countries.....	6,120	8,354	50,101	107,172	66,237
Bituminous total.....	1,247,178	1,389,751	11,075,308	14,704,075	15,411,505
Italy.....	209,557	72,771	960,233	2,406,073	999,853
Canada.....	661,486	912,653	6,962,352	7,864,823	9,789,930
Panama.....	12,000	48,094	261,343	397,600	437,301
Mexico.....	19,765	16,113	338,919	183,937	166,880
Cuba.....	97,691	112,802	882,572	1,019,388	1,176,881
Other West Indies and Bermuda.....	38,129	41,174	379,015	494,976	414,327
Argentina.....	93,382	31,612	297,328	576,087	665,834
Brazil.....	49,287	51,807	339,597	510,371	616,271
Uruguay.....	7,713	4,329	77,270	107,227	98,479
Other countries.....	58,168	98,396	576,679	1,143,593	1,045,749
Total coal.....	1,466,160	1,976,166	13,982,166	17,617,334	19,015,457
Coke.....	83,648	79,759	459,264	795,416	883,785
Bunker coal.....					

PENNSYLVANIA R.R.

The following is a statement of coal and coke carried on this system during May and first five months of the year:

	May	Increase or Decrease	5 Months	Increase or Decrease
Anthracite coal, short tons.....	944,341	-12,750	4,708,740	-243,409
Bituminous coal, short tons.....	4,681,032	=754,982	21,753,013	=1,228,523
Coke, short tons.....	1,041,976	-187,464	5,088,753	-1,073,438
Total.....	6,667,349	554,768	31,550,500	-88,324

NORFOLK & WESTERN

Destination of shipments over this road for April and the first four months of last year and this year were as follows, in short tons:

	April 1916	April 1917	Four Months 1916	Four Months 1917
Tidewater.....	320,680	269,305	993,848	870,229
Foreign.....	317,655	277,532	1,289,151	1,045,135
Coa'wise.....	2,244,063	2,204,557	8,636,048	8,546,934
Dm's'te.....				
Coke.....	2,230	1,946	17,456	15,333
Foreign.....	187,150	191,889	696,079	791,970
Domestic.....				
Total.....	3,071,778	2,945,229	11,632,582	11,269,601

THE CHESAPEAKE & OHIO

Comparative statement of coal and coke traffic from New River, Kanawha and Kentucky districts for the month of May, 1917-16 and the first five months in short tons:

	May 1917	May 1916	Five Months 1917	Five Months 1916
Tidewater.....	535,617	472,821	2,586,208	2,248,655
East.....	231,527	202,730	1,258,056	1,212,364
West.....	1,380,236	1,636,287	5,740,111	6,768,481
Company's.....				
Fuel.....	177,290	257,631	983,560	1,085,003
From Connections.....	147,262	232,256	741,850	1,022,075
Total.....	2,471,932	2,801,725	11,309,785	12,336,578
Anthracite.....	925	748	4,494	4,590
Total.....	2,472,857	2,802,473	11,314,279	12,341,168
Coke.....	46,060	48,245	218,306	235,615

I. C. C. Decisions

No. 5584. Campbell's Creek Railroad Co. vs. Ann Arbor Railroad. Submitted Apr. 8, 1916. Decided Apr. 24, 1917.

The Campbell's Creek Railroad Co. is entitled to receive a division on coal delivered to the Kanawha & Michigan Railway, figured upon the basis of a mileage prorate of 28 miles, 200 per cent. of the actual mileage of its line.

No. 9226. Spahn & Rose Lumber Company vs. Louisville & Nashville Railroad. Submitted Feb. 2, 1917. Decided June 2, 1917.

Charges legally applicable on a carload of soft coal from Gatlin, Ky., to Parkersburg, Iowa, diverted in transit to Jesup, Iowa, found to have been unreasonable to the extent that they exceeded the charges that would have accrued on the basis of the through rate, plus a charge of \$2 for the extra service incident to the diversion.

No. 8869. Freight Bureau, Chamber of Commerce, Macon, Ga., vs. Macon, Dublin & Savannah Railroad. Submitted Sept. 11, 1916. Decided June 6, 1917.

Rate on bituminous coal from Cairnes, Ky., to Dry Branch, Ga., not shown to have been or to be unreasonable. Complaint dismissed.

NORFOLK & WESTERN

The following is a statement of coal handled by the N. & W. Ry. during April and the preceding two months in short tons:

	February	March	April
Pocahontas.....	1,161,688	1,388,854	1,397,418
Tug River.....	277,597	295,175	293,324
Thacker.....	236,094	273,483	270,051
Kenova.....	66,388	76,211	73,404
Clinch Valley.....	118,450	131,487	130,561
Miscellaneous.....	9,179	10,272	8,835
Total N. & W.....	1,869,396	2,175,482	2,173,593
Wlm. & Pond Ck.....	110,530	128,198	133,205
Tug. R. & Ky. R.R.....	49,138	51,511	49,073
Other roads.....	175,106	241,864	367,497
Grand total.....	2,204,170	2,597,055	2,723,368

Foreign Markets

GREAT BRITAIN

June 14—The market continues to be very steady, although there are no operations, on a large scale, outside Government requirements.

Best Welsh steam.....	Nominal
Best seconds.....	Nominal
Seconds.....	\$6.96@7.20
Best dry coals.....	6.24@6.48
Best Monmouthshires.....	6.96@7.20
Seconds.....	6.24@6.48
Best Cardiff smalls.....	4.56@4.80
Cargo smalls.....	4.08@4.56

The prices for Cardiff coals are f.o.b. Cardiff, Penarth or Barry, while those for Monmouthshire descriptions are f.o.b. Newport, both net, exclusive of wharfage.

Freights—Freights continue to be very firm in all directions. The maximum rates have, in some instances, been departed from on account of urgency.

Gibraltar.....	\$21.60	Port Said.....	\$33.60
Marseilles.....	21.54	Las Palmas.....	18.00
Genoa.....	24.30	St. Vincent.....	19.20
Naples.....	23.58	River Plate.....	26.40
Alexandria.....	33.60		

Financial Department

Lehigh Valley Coal Co.

This company reports for the six months ended Dec. 31, 1916, as follows:

Results—The total net income from all sources, after deducting charges for royalties, sinking funds, depreciation and interest on funded debt, amounted to \$322,217, a decrease of \$435,749, as compared with the same period in 1915. This decrease is due to the smaller amount of coal mined as a result of the scarcity of labor, the shorter working day and the higher wages provided for in the agreement with the miners which was entered into last year, and the increased prices of all classes of material required in the operation of the property.

Production—The production of anthracite coal from the lands owned and leased by your company, including that mined by tenants, was 4,038,924 gross tons, a decrease of 222,526 tons. The percentage of sizes above pea produced by the mining operations of the company was 65.20 per cent., a decrease of .50 per cent. The number of breaker hours worked was 22,122, a decrease of 1317 hours. The bituminous coal mined from the Snow Shoe lands, located in Centre County, Pennsylvania, amounted to 115,331 gross tons, a decrease of 28,309 tons.

Additions, Etc.—During the 6 months' period in 1916, \$77,503 was expended for additions and betterments.

Development work on the Broadwell tract is progressing favorably. Gangways are being driven, and as soon as this work has advanced sufficiently regular mining will be started. The coal will be taken to the William A. Colliery for preparation, track connections for this purpose now being under construction.

Financial—By action of the sinking fund the funded debt was reduced by the cancellation of \$148,000 Delano Land Co. First Mortgage 5 per cent. bonds. Payments amounting to \$93,689 were made to the various sinking funds. Current assets are \$4,895,086 in excess of current liabilities.

GENERAL BALANCE SHEET

Assets	Dec. 31, '16	June 30, '16
Property and plant.....	\$25,951,313	\$25,943,880
Securities owned.....	200,000	200,000
Sink. fd. with trus.....	2,614,390	2,600,387
Advances for coal-mining rights.....	4,399,763	4,378,969
Insurance fund.....	152,584	144,532
Cash.....	4,240,475	4,491,004
Materials and supplies.....	541,218	407,756
Notes receivable.....		4,000
Due from individuals and companies.....	2,138,639	1,889,102
Suspended and deferred assets.....	\$695,864	422,812
Total.....	40,934,246	40,482,443
Liabilities	Dec. 31, '16	June 30, '16
Capital stock.....	\$1,965,000	\$1,965,000
Funded debt.....	19,540,000	19,688,000
Audited vouchers.....	834,275	630,072
Wages due and unpaid.....	538,566	570,756
Due individuals and companies.....	102,586	108,153
Royalties on coal mined, due lessors.....	29,992	30,106
Interest on fd. dt. due.....	295,000	298,700
Deferred real estate pay'ts..	500,000	500,000
Miscellaneous.....	1,167,406	1,404,554
Depr. and other res'v'e.....	9,756,418	9,292,216
Profit and loss.....	6,205,002	5,994,886
Total.....	\$40,934,246	\$40,482,443

Sheffield Coal & Iron Co.

This company has issued the following statement in connection with a new bond issue it is making:

New Bonds—The bonds are to be secured by a first mortgage on all property of the company, which owns in fee 70 acres of land, more or less, at Sheffield, Ala., on which is erected the furnace plant; ore properties in fee in Alabama and Tennessee,

consisting of 6604 acres of land, more or less; mineral rights in 6815 additional acres of land in Alabama and Tennessee; 40 acres of land and 300 beehive coke ovens at Jasper, Ala., and all of the capital stock and bonds of the Stonegap Colliery Co., a company operating at Glamorgan, Wise County, Va., as lessee, about 5700 acres of land, and owns in fee 325 acres of land; has erected 350 beehive coke ovens; 131 workmen's houses, etc. Estimated coal under the lands so leased and owned about 32,000,000 tons.

Estimated Earnings—The proposed by-product coke ovens will enable the company to produce at the works high-grade coke from Alabama coal at a low cost, probably \$8 or less a ton, with the present grade of ore produced from the properties and cheap by-product coke. For the present it is contemplated the coke will be made in the company's 300 beehive ovens at Jasper, Ala., using Alabama coal and purchased on a sliding scale from the Pratt Consolidated Co.

Island Creek Coal

It is difficult to see how the Island Creek Coal Co. can escape profits for 1917 of less than \$25 per share, and it is entirely possible that net earnings will reach as high as \$30 per share.

For the past six years the company's output has hovered around 2,000,000 tons—sometimes a little less, more frequently a little more. For the past three years the production has averaged somewhat over 2,200,000 tons.

In no one of the past six years has the profit amounted to as much as 50c. per ton—that is, the profit after all administration expenses and depreciation charges. In 1916, the best year in the company's career, the profit per ton, after charges of every nature, was 49c., and this margin enabled the company to show \$6 per share on 50,000 shares of preferred, and only a trifle less than \$7 per share on 119,000 shares of common.

It is understood that at the present time the company is selling spot coal at \$3.50 and better at the mines. For the first three months of this calendar year, however, the company was completing some low-priced contracts and the average price was relatively low, at least low in comparison with the spot coal market. If the company were to average \$3 per ton for the 12 months of 1917, it would seem reasonable to expect a profit of \$2 per ton, as for Island Creek an allowance of \$1 per ton for operating and miscellaneous charges is ultra-liberal.

We present below a sketch of the company's output, net profits, profits per ton, and earnings per share for the past six years:

	Tons	Net	Profit per Ton	Earnings per Share
1916.....	2,280,661	\$1,125,566	49	\$6.96
1915.....	2,213,616	690,252	31	3.30
1914.....	2,207,444	823,480	37	4.66
1913.....	1,916,100	629,672	33	3.11
1912.....	2,039,887	677,132	33	3.77
1911.....	1,876,446	531,613	28	2.34

By reason of car shortage the company will probably be unable to ship more than 1,800,000 tons in the current calendar year. A profit of only \$1 per ton on this tonnage would mean earnings equal to \$12.60 per share. At \$1.50 per ton the profits would amount to \$20.20 per share. At \$2 per ton the balance for the common is equal to \$27.80 per share. The following table sets forth the possibilities for Island Creek common calculated on various profits per ton:

Profit per Ton	Total Net	Equal on Com. After 6% on Pfd.
\$1.....	\$1,800,000	\$12.60
1.25.....	2,250,000	16.40
1.50.....	2,700,000	20.20
1.75.....	3,150,000	24.00
2.00.....	3,600,000	27.80

"Boston News Bureau."

Eastern Utilities Coal

This company has issued the following statement in connection with some new financing it is undertaking:

Security—A first mortgage on 1076 coal acres and 63 acres of surface lands, mining equipment miners' houses, etc., and all property hereafter acquired on a branch of the B. & O. R.R. at Lost Creek, Harrison County, W. Va., about 12 miles south of Clarksburg. Value of property as appraised by engineer (including \$50,000 to be spent), placed at \$433,675.

Property—Contains two veins of bituminous coal suitable for general steam and locomotive purposes, containing an estimated recoverable long tonnage of 8,316,000 tons. The property as now developed and equipped is capable of producing about 100,000 tons per year. From the proceeds of the bonds a sufficient amount will be spent immediately to bring production up to 200,000 tons per annum.

Contract—For the year 1918 the subsidiary operating companies of the Eastern Power and Light Corporation and General Gas and Electric Co. (both companies being under the management of W. S. Barstow & Co., Inc.) will require a minimum of 235,000 tons of coal and will contract to take all the coal the company can produce up to that amount at an average price of \$2 per long ton f.o.b. cars mines.

Sinking Fund—The sinking fund of 15c. per ton of coal mined and shipped becomes operative at once and will retire all of the bonds before maturity. The guaranteed minimum amounts will be \$18,000 a year from 1918 to 1922; \$22,000 per year from 1923 to 1927; \$25,000 per year from 1928 to 1932. Surplus earnings over and above fixed charges, principal payments of bonds, notes, interest, taxes, etc., must either be used to redeem additional amounts of the 6% secured gold notes or for capital expenditures. No dividends can be paid on the stock until all the outstanding notes are redeemed.

ESTIMATED EARNINGS FOR YEARS ENDING NOVEMBER 1

	1918
120,000 tons at \$2.....	\$240,000
Mining costs at \$1.25.....	150,000
Deduct—	
Sink. fd., 120,000 tons.....	18,000
Int. on \$325,000 bds. @ 6%.....	19,500
Notes retired.....	20,000
Int. on \$150,000 notes @ 6%.....	9,000
Balance.....	\$23,500
	1919
200,000 tons at \$2.....	\$400,000
Mining costs at 95c.....	190,000
Deduct—	
Sink. fd., 200,000 tons.....	30,000
Int. on \$307,000 bonds.....	18,420
Notes retired.....	20,000
Int. on \$130,000 notes.....	7,800
Balance.....	\$133,780

W. S. Barstow & Co., Inc., managers of the property, advise that surplus earnings after all charges will be not less than \$300,000 applicable to guarantee for year ending Feb. 28, 1917.

American Coal Co.

This company, located in Allegheny County reports earnings for the past two years as follows:

Calendar Year	Gross Earnings	Net Earnings	Depreciation
1916.....	\$993,156	\$272,331	\$84,859
1915.....	1,032,216	243,733	81,245

Calendar Year	Dividends (6%)	Balance Surplus
1916.....	See below	\$187,471
1915.....	\$90,000	72,488

In 1916 the company paid dividends aggregating \$375,000, viz.: 5% in March, 1916 (\$75,000) and 20% September, 1916 (\$300,000).